

**Site-Specific Health and Safety Plan**  
**Former ORP/Building 1 Area**  
**Former Oakland Army Base—EDC Area**  
**Oakland, California**

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*Prepared For:*

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Health and Safety Forms

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## ABBREVIATIONS AND ACRONYMS

bgs	Below ground surface
Cal-OSHA	California Occupational Safety and Health Administration
CCR	California Code of Regulations
CFR	California Code of Federal Regulations
CIH	Certified Industrial Hygienist
COC	Chemical of concern
EDC	Economic Development Conveyance
EKI	Erler and Kalinowski, Inc.
LEL	Lower explosive limit
NAPL	Non-aqueous phase liquids
OARB	Oakland Army Base
OBRA	Oakland Base Reuse Authority
ORP	Oil Reclaiming Plant
OSHA	U.S. Occupational Safety and Health Administration
OVM	Organic vapor monitor
PAHs	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
PEL	Permissible exposure limit
PID	Photoionization detector
PPE	Personal protective equipment
psi	Pounds per square inch
RAP	Remedial Action Plan
RDIP	Remedial Design and Implementation Plan
SSHSP	Site-specific Health and Safety Plan
SSO	Site Safety Officer
TPH	Total petroleum hydrocarbons
TPH-d	Total petroleum hydrocarbons as diesel
TPH-mo	Total petroleum hydrocarbons as motor oil



## 1.0 GENERAL INFORMATION

This Site-Specific Health and Safety Plan (SSHSP) has been prepared by Northgate Environmental Management, Inc. (Northgate), on behalf of Pacific States Environmental Contractors, Inc. (Pacific States), to describe health and safety information and guidelines for the proposed remediation in the vicinity of the former Oil Reclaiming Plant (ORP)/Building 1 Area (the “Site”). The Site is located at the former Oakland Army Base (OARB) in Oakland, California. This document was prepared by Ms. Sarah Tran, E.I.T., and reviewed by Mr. Alan Leavitt, P.E., and Mr. Michael Connor, C.I.H.

Figure 1 shows the general vicinity location of the former OARB and the Former ORP/Building 1 Area. The Site plan is shown on Figure 2. A hospital route map from the Former ORP/Building 1 area is shown on Figure 3.

The purpose of this SSHSP is to provide information and establish guidelines to enable field personnel to work safely while excavating and treating Building 1 Remediation Waste. The principal chemical hazards to construction workers will be dermal contact with the soil containing chemicals of concern (COCs) potentially present in soil, dermal contact with portland cement, and inhalation of dusts and vapors from volatile COCs. Other project-specific hazards will be physical hazards, as described in more detail in Section 4.1.

Activities performed in accordance with this SSHSP comply with applicable requirements of Title 8 California Code of Regulations (CCR), Section 5192, Pacific States health and safety policies, the *Contract Documents for Former ORP/Building 1 Area Remediation Project (Contract Documents)* (EKI, 2004), and the requirements of applicable regulations established by the California Occupational Safety and Health Administration (Cal-OSHA). This SSHSP includes:

- General Information;
- Key Personnel/Health and Safety Responsibilities;
- Facility/Site Background;
- Job Hazard Analysis/Hazard Mitigation;
- Air Monitoring Procedures;
- Personal Protective Equipment (PPE);
- Work Zones and Site Security Measures;
- Decontamination Measures;
- General Safe Work Practices; and
- Medical Surveillance and Training Requirements for Site Personnel.



All field personnel, including contractors and subcontractors, will be required to read and follow the health and safety requirements set forth in this SSHSP. One requirement of this SSHSP is that such workers and personnel attend a pre-job health and safety conference (conducted by the Site Safety Officer [SSO]) prior to the start of the fieldwork. The purpose of the conference will be to discuss potential physical and chemical hazards at the job Site, health effects of potential chemical hazards, required levels of protection, monitoring procedures, action levels, designated hospital routes, locations of emergency equipment, emergency telephone numbers, decontamination procedures, and project organization in terms of key health and safety personnel and their responsibilities.

Workers will agree to comply with the provisions of this SSHSP, in writing, prior to the start of fieldwork. After reading the SSHSP and attending the mandatory pre-job conference, all workers will be required to sign the Safety Compliance Agreement and Documentation of Site Safety Briefing form (Appendix A).

At the beginning of each day of fieldwork, the SSO will hold an on-Site safety briefing for the purpose of communicating the project objectives for the day, specific Site hazards, reviewing Site safety procedures, and providing updated Site information based on observed field conditions. The daily field safety briefing, and those in attendance, will be documented on the Daily Health and Safety Form (Appendix A).

Any person failing to follow the procedures outlined in this SSHSP will not be allowed access to that part of the Site defined as the exclusion and contaminant reduction zones during field activities. Subcontractors shall operate in accordance with this SSHSP, in addition to established health and safety requirements of their employer.

The following Pacific States health and safety policy documents are incorporated (by reference) as a part of this SSHSP:

- Hazard Communication Program;
- Field Injury/Illness Prevention Program (including Medical Surveillance and Hearing Conservation Programs); and
- Respiratory Protection Program.

As an additional requirement of this SSHSP, assigned Pacific States personnel will have a working knowledge of the policies, provisions, and requirements of these documents.



## **2.0 FACILITY/SITE BACKGROUND**

Portions of the former OARB were transferred to the Oakland Base Reuse Authority (OBRA) on August 8, 2003, by the U.S. Department of Defense, Department of the Army (Army), by an Economic Development Conveyance (EDC). The property transferred by the EDC is referred to as the former OARB-EDC area. Several environmental remediation areas are located in the EDC. This section describes the portion of the EDC in which the former ORP/Building 1 remediation will occur.

### **2.1 Site Description**

An ORP operated at the Site from the mid- to late- 1920s until 1941. Acid sludge, spent clay, and other oily wastes from the ORP were dumped in an area that was subsequently covered by 3 feet of imported fill during the construction of Building 1 in 1941. As a result, a layer of Organic Residue, a spongy, black, tarry, organic material, and other oily wastes are present in the subsurface under portions of the former Building 1. Additional information on the background of the former ORP/ Building 1 Site is provided in the *Draft Remedial Design and Implementation Plan* (RDIP; EKI, 2004). The ORP derived wastes will be excavated from the footprint of the former ORP and “dump” as shown on Figure 2.

### **2.2 Waste Characteristics**

This section describes some of the characteristics of the ORP derived waste.

COCs associated with the Site include:

- Lead;
- Total petroleum hydrocarbons as diesel (TPH-d);
- Polychlorinated biphenyls (PCBs);
- Low pH levels;
- Polycyclic aromatic hydrocarbons (PAHs); and
- Dioxin-like compounds.





The maximum concentrations of COCs identified above remedial goals in either the *Final Remedial Action Plan* (RAP) (EKI, 2002) or the RDIP (EKI, 2004) for soil samples previously collected at the former ORP/Building 1 area are shown below.

Chemical of Concern	Maximum Soil Concentration (mg/kg)
<b>Metals</b>	
Arsenic	96
Barium	11.6
Cadmium	11.1
Chromium	3.54
Copper	126
Lead, Total	17,000
Nickel	4.07
Vanadium	1.12
Zinc	16.4
<b>Petroleum Hydrocarbons</b>	
TPH-d	63,000
TPH-mo	430,000
<b>PCBs</b>	13
<b>pH</b>	0-8 (no units)
<b>PAHs</b>	
Acenaphthene	210
Anthracene	16
Benzo(a)anthracene	26.8
Benzo(a)pyrene	1
Benzo(b)fluoranthene	33
Chrysene	36
Dibenz(a,h) anthracene	7.6
Dibenzofuran	170
Fluoranthene	150
fluorene	180
2-methylnaphthalene	240
Naphthalene	1,200
Phenanthrene	520
Pyrene	21
<b>Dioxin-like Compounds</b>	
1,2,3,7,8- pentachlorodibenzofuran	0.075
2,3,7,8- tetrachlorodibenzofuran	0.0153
Pentachlorinated dibenzofurans, total	0.0968
Tetrachlorinated dibenzofurans, total	0.128
<b>Volatile Organic Compounds</b>	
Acetone	2.7
Carbon tetrachloride	0.94
1,2,3-Trichloropropane	0.32
Xylenes	10.8



Portland cement will be utilized to stabilize lead in the Building 1 Remediation Waste, raise the pH of the material, and reduce the moisture content. Table 1 characterizes the toxicological properties by class of the suspected COCs and portland cement.

## **2.3 Task Descriptions and Sampling Objectives**

This section describes the objectives of the remediation project at the Site and the work to be conducted to meet those goals.

### **2.3.1 Purpose**

The purpose of the remediation project at the former ORP/Building 1 Site area is to clean up the Site in accordance with the RDIP, to allow future redevelopment of this area. A detailed description of the proposed remediation is provided in the *Contract Documents* (EKI, 2005).

### **2.3.2 Field Activities**

Remediation activities to be conducted include the following:

- Demolish pavement, slabs, foundations, and other surface and subsurface improvements within the planned excavation area;
- Remove and restore existing specified site utilities;
- Excavate chemically-impacted soil;
- Stockpile the excavated soil in separate stockpiles;
- Collect and coordinate analysis of excavation sidewall;
- Treat Building 1 Remediation Waste to meet Alternate Treatment Standards;
- Backfill excavation with reusable soil, select reusable soil, or import backfill;
- Load, transport, and recycle or dispose of demolition debris and stockpiled soil at an appropriate recycling or disposal facility; and
- Restore site utilities and paving, all in accordance with the contract documents.



### 3.0 KEY PERSONNEL/HEALTH AND SAFETY RESPONSIBILITIES

The planned remediation activities will involve the participation of personnel from:

- Pacific States
- Acumen Industrial, Inc. (Acumen)
- Northgate
- McGuire and Hester, Inc.
- Gallagher and Burke, Inc.
- Chrisp Company
- Worldwide Land Surveys and Civil Engineering, Inc.
- Vironex, Inc.
- D and E Construction, Inc.
- Tello and Son Maintenance
- Kuma Corporation.

The following list identifies the key health and safety personnel responsible for implementing this SSHSP:

<i>Project Manager:</i>	Keith Wayne (Pacific States)
<i>Certified Industrial Hygienist (CIH):</i>	Paul Spillane (Acumen)
<i>Site Safety Officer/Site Supervisor:</i>	Kevin Stonestreet (Pacific States)

Table 2 provides a summary of the health and safety responsibilities and authorities of these key individuals.



## **4.0 JOB HAZARD ANALYSIS/HAZARD MITIGATION**

This section discusses potential physical, chemical, and task-specific hazards related to work at the Site.

### **4.1 Physical Hazards**

The potential physical hazards associated with conducting this investigation are discussed in the following subsections.

#### **4.1.1 Noise**

Working near heavy equipment can expose workers to noise in excess of allowable limits. Personnel who are not required to work near loud equipment should stay as far away as possible to lower the risk of noise-induced hearing loss. Personnel who operate or work adjacent to heavy equipment must wear hearing protection to reduce their exposure to excessive noise.

#### **4.1.2 Ground Instability Near Excavations**

To mitigate the hazard posed by ground instability near open excavations, these procedures will be followed:

- Under no circumstances will any worker enter an excavation that is greater than 4 feet in depth unless the excavation has been stabilized by shoring or sloping the sidewalls and evaluated for a hazardous atmosphere in accordance with Cal-OSHA standards.
- Personnel are not permitted to stand within 2 feet of the perimeter of any excavation extending greater than 4 feet below the ground surface (bgs). Caution tape or flags will be placed at the 2-foot mark, or at a greater distance, to alert personnel of excavation danger.
- Any material, refuse, and/or soil may be stockpiled beginning at a horizontal distance from a sloped excavation perimeter equal to half the expected vertical depth of the excavation (as measured from the toe of the excavation) except that in no event will stockpiles be located farther from the trench than is accessible by swinging the backhoe bucket. No stockpiling will be permitted behind sheet pile shoring.
- Any necessary sloping to increase sidewall stability will be performed in accordance with OSHA 1926.650 652, Subpart P, and Cal-OSHA regulations (8 CCR 1529, et seq.).



#### **4.1.3 Heavy Equipment Operation**

Only qualified subcontractor personnel will operate heavy equipment during field activities. Heavy equipment subcontractors will maintain operable safety devices (i.e., backup alarms, emergency stops, and guards on machinery and rotating equipment) at all times. Subcontractors will implement effective safety programs for equipment use. Heavy equipment with rotating shafts or gears will be guarded to prevent accidental contact. In cases where rotating parts cannot be completely guarded, only experienced operators will be permitted to work around these rotating parts. Personnel who perform work around rotating equipment will not wear loose-fitting clothes that could get caught in the machinery.

#### **4.1.4 Vehicle Operation**

Vehicles will only be operated in authorized areas by properly trained and licensed personnel. When moving equipment, personnel should exercise caution so as not to damage equipment or cause injury. When backing up heavy vehicles (larger than pickup trucks), passenger vehicles, or pickups with obscured rear vision, an individual will stand outside of the vehicle and safely direct the driver. Heavy vehicles and equipment will be equipped with a minimum of one fire extinguisher for each unit.

Field personnel will wear high visibility reflective vests or clothing at all times and utilize traffic cones or barriers to alert traffic operations. Evacuation procedures will be discussed and agreed upon for the safe coordination of egress from the Site, if necessary.

#### **4.1.5 Steam Cleaning Equipment**

Steam cleaner operators will be required to use safety glasses with side shields and face shields when steam cleaning. Only qualified personnel trained in the safe operation and maintenance of such equipment will be authorized to use the steam cleaner. Subcontractors operating such equipment will include safety precautions in their standard code of safe practices.

#### **4.1.6 Slipping, Tripping and Falling**

Work zone surfaces will be maintained in a neat and orderly manner to minimize the possibility of slips, trips, or falls. Materials will not be stored on the ground in foot-traffic routes. Tools and materials will not be randomly left on surfaces when not in direct use. The Site supervisor will ensure that the work areas are maintained in a neat and orderly state. When hoses or cables must be left in place for more than one work shift, such materials will be grouped, routed to minimize hazards, and covered with a ramp or bridge and/or clearly marked with hazard tape or flags.



#### **4.1.7 Manual Lifting Techniques**

Personnel will be trained in safe lifting techniques for all manual material handling tasks. When heavy objects (i.e., greater than 45 pounds) must be lifted manually, workers will keep the load close to the body and avoid any twisting or turning motions to minimize stress on the lower back. An adequate number of personnel or an appropriate mechanical device must be used to safely lift or handle heavy equipment.

#### **4.1.8 Heat Stress**

Heat stress may become a significant risk factor when ambient temperatures are high and field personnel are involved in physical activity. Personnel will be made aware of the symptoms of heat stress so that immediate treatment can be provided should heat stress occur. The SSO will initiate a heat stress monitoring program whenever personnel are wearing semi-permeable or impermeable protective clothing and the outside temperature reaches 70°F. For personnel in normal work clothing, a heat stress monitoring program will be initiated when outside temperatures surpass 80°F for more than one hour. At a minimum the heat stress monitoring program shall consist of 15 minute rest periods every hour, and consultation with the CIH to determine if any modifications to this program are necessary. In extremely hot weather (90°F and above), alternatives such as working at night or using specialized clothing and equipment (ice vests or other cooling devices) will be considered.

#### **4.1.9 Fire and Explosion Hazards**

Based on the apparent absence of TPH-gasoline and other flammable COCs at the Site, there appears to be a low potential for fire and explosion hazards to develop with respect to soil contaminants at the Site. Nevertheless, the air quality in excavation areas needs to be monitored for potentially explosive conditions when working in excavation areas and with utilities (e.g., sanitary sewer piping) that could contain methane or other potentially flammable or toxic substances. Appropriate precautions must be taken to control or eliminate ignition sources at any locations where there is a fire or explosion hazard.

#### **4.1.10 Underground Utilities**

Before potholing or excavating, an underground plan and utility check will be performed. Underground Service Alert will be notified at least 48 hours prior to commencing subsurface field activities. Hand excavation will be used to locate buried utilities or other potential obstructions when their presence is suspected, or if adequate clearance cannot be achieved. The SSO, Site Supervisor, or subcontractor involved in the work activity may call for hand excavation when the safety of an operation is in question.



#### **4.1.11 Overhead Hazards**

Confirmation that all overhead utilities have been disconnected will be achieved prior to the initiation of any subsurface utility demolition activities at the Site.

### **4.2 Chemical Hazards**

Based on knowledge of former use, transfer, and/or handling and storage practices, various COCs (as listed in Section 2.0) have either been identified or may be present at the Site. In addition, portland cement will be mixed and spread on the surface of an 18-inch thick lift of Building 1 Remediation Waste using a Spreader.

The principal routes of exposure for the chemicals that might be encountered during remediation activities include inhalation of vapor phase contaminants, inhalation of dust-borne contaminants, dermal exposure, and incidental ingestion. Based on available data, it is not anticipated that workers will be exposed to COCs or portland cement at concentrations that will exceed Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs). Table 1 characterizes the toxicological properties by class of COCs and portland cement suspected to be present on the former ORP/Building 1 Site.

### **4.3 Task-Specific and Job Hazard Analysis**

Tasks performed during implementation of the *Contract Documents* (EKI, 2005) have been classified as either non-intrusive (“No Hazard” to “Very Low Hazard”), “Low Hazard”, or “Moderate Hazard Activities”. None of the planned tasks are considered to be “High Hazard” activities. Soil excavation is considered to have the greatest potential for causing serious injuries to workers. The task-specific hazard classification for each job task to be performed is summarized in Table 3; a job hazard analysis summary is presented in Table 4.

### **4.4 Confined Space Entry**

Pacific States’ subcontractor for utility demolition, McGuire and Hester, Inc., will enter confined spaces to plug storm drain and sewer lines. McGuire and Hester, Inc. routinely insure no hazards exist prior to implementing their non-permit confined space procedures. Appendix B contains confined space permit information and procedures.



## 5.0 AIR MONITORING PROCEDURES

Ambient air conditions will be monitored during fieldwork for potential organic vapor releases and respirable dust to determine whether measured concentrations are less than Federal OSHA and Cal-OSHA action levels and PELs. Concentrations of organic, toxic, and/or hazardous materials at the Site are expected to be below their respective OSHA PELs.

The SSO will insure that worker-breathing zones and soil stockpiles are monitored for organic vapors using a photoionization detector (PID) (also known as an organic vapor monitor [OVM]). An explosimeter or lower explosive limit (LEL) meter may also be used to monitor potentially explosive atmospheres at the excavation areas. Such monitoring instruments will be properly calibrated on a daily basis and all calibrations documented. The air contaminant of greatest potential concern is lead associated with PM<sub>10</sub> dust. When intrusive activities generate significant, visible airborne particulate dust, which may contain lead, a calibrated direct-reading aerosol dust monitor (i.e., MIE, pDR 1000) may be used at the discretion of the SSO. The use of dust suppression methods is preferred over air monitoring and respiratory protection so as to prevent the spread of potentially contaminated airborne dust.

### 5.1 Monitoring Requirements

Periodic monitoring will be conducted with a PID in the breathing zone of workers with the greatest potential for exposure to organic vapors. The SSO will determine the frequency of monitoring for each task based on-Site conditions after consultation with the project's CIH. Calibration of these instruments will be performed on a daily basis in accordance with manufacturers' guidelines. A sample Calibration Log is provided in Appendix A.

Monitoring for flammable gases will be performed with an explosimeter, since a PID is typically not sensitive to methane. The primary purpose of this monitoring is to detect gas utility leakage, accidental utility punctures, and/or gas pockets to prevent possible explosions from occurring.

A Daily Health and Safety Form (Appendix A) will be maintained by the SSO. This will include, at a minimum:

- A description of the field work being performed;
- Any changes in the operation;
- The names of personnel working at the Site;
- The types of air monitoring equipment being used and calibration data;





- Air monitoring results;
- The level of PPE worn at the Site; and
- Reports of any accidents, injuries, unusual circumstances, or physical complaints.

Calibration records and Daily Health and Safety forms will be maintained by the SSO in the Site files; the Site Supervisor will also maintain these records/forms at Northgate's office.

## 5.2 Action Levels

Minimum action levels for changes in PPE and stop-work requirements based on air monitoring activities are listed in Table 5.

The following are the criteria for upgrading to Level C (as described in Section 6.0)

- Photoionization detector (PID) measurements exceed 5 parts per million (ppm) as a 15-minute time weighted average (15 min-TWA) in the breathing zone. Alternatively, work may be suspended until breathing zone concentrations, as measured by PID, fall to less than 5 ppm. Respirator use may be rescinded when breathing zone levels fall to less than 5 ppm (15 min-TWA). The project CIH shall be notified should the 5 ppm 15 min-TWA criterion be exceeded three times daily.
- Airborne lead exposures exceed 50 micrograms of lead per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ). Half face air purifying respirators (with N-100 filters) may be worn for lead concentrations up to  $500 \mu\text{g}/\text{m}^3$ . Full face respirators (with N-100 filters) shall be used for concentrations of up to  $2,500 \mu\text{g}/\text{m}^3$ . Respirator use may be suspended if follow up air monitoring results indicate lead exposures to be less than  $50 \mu\text{g}/\text{m}^3$ .

The following are the criteria for upgrading to Level B (as described in Section 6.0). Note that all upgrades to Level B will require specific approval from the project CIH. Wherever feasible, the project CIH shall evaluate engineering controls as an alternative to Level B upgrades.

- Photoionization detector (PID) measurements exceed 50 parts per million (ppm) as a 15-minute time weighted average (15 min-TWA) in the breathing zone. Alternatively, work may be suspended until breathing zone concentrations, as measured by PID, fall to less than 5 ppm, in which case respiratory protection may be discontinued. Or, if breathing zone concentrations fall to between 5 ppm and 49 ppm (both 15 min-TWAs), respiratory protection may be downgraded to Level C as discussed above. The project CIH shall be notified should the criterion to upgrade from Level C to Level B be exceeded (i.e., 50 ppm 15 min-TWA) to review specific Level B procedures.



- Level B respiratory protection shall be required if airborne lead exposures exceed 2,500  $\mu\text{g}/\text{m}^3$ . Again, the project CIH shall consider the feasibility of engineering controls rather than requiring an upgrade to Level B respiratory protection. Respiratory protection shall be downgraded to Level C as discussed above based on additional lead air monitoring. Respirator use may be suspended if follow up air monitoring results indicate lead exposures to be less than 50  $\mu\text{g}/\text{m}^3$ .

The following are criteria for stopping work:

- Breathing zone PID measurements exceed 50 ppm, or
- Airborne lead exposures exceed 10,000  $\mu\text{g}/\text{m}^3$ , or
- Airborne dust exposures exceed 1,000  $\mu\text{g}/\text{m}^3$  on a 15 min-TWA. This shall trigger additional emphasis on dust control.

Except for dust related causes that can be controlled through enhanced dust control methods, the project CIH shall be contacted to review appropriate actions anytime field operations need to be suspended due to exceeding any of the stop work criteria.



## **6.0 PERSONAL PROTECTIVE EQUIPMENT**

Appropriate PPE will be worn during all field activities. The specifications for PPE levels to be worn, or that may be required based on exceeding action levels, are shown in Table 6. Work requiring Level A PPE is not anticipated at this Site. Therefore PPE for this level is not included in Table 6. Although Level B PPE is not likely to be required, Table 6 includes a description for this action level, in accordance with the OBRA contract documents. The initial level of PPE required to implement field activities for the Site as determined by the project CIH is Level D.

Air monitoring will be conducted to evaluate the potential for inhalation of organic vapors, dust, and lead. Modifications of PPE levels may be warranted if air monitoring should indicate that elevated concentrations of contaminants or dust are present, as discussed in Section 5 which provides for upgrades to Level C and Level B protection. Upgrades to Level B protection shall require review from the project CIH. This shall be documented in an addendum to this SSHSP. The use of respirators shall be consistent with applicable employer respiratory protection program as required by Title 8 California Code of Regulations Section 5144. All respirator users shall be current in medical evaluation, respirator training and fit testing. Respirator training and fit testing is required prior to initial use and a medical evaluation is conducted on an annual basis.

Equipment decontamination will be performed in the highest-level of PPE associated with the task that required the equipment. These associated levels of PPE may be modified by the SSO based on observations made during decontamination activities (i.e., observed splash hazards associated with decontamination fluids).



## 7.0 WORK ZONES AND SITE SECURITY MEASURES

In accordance with regulations, work on contaminated sites requires that three work zones be established:

- The **Exclusion Zone** is the Limit of Work area where contamination could or does occur, and excludes the building areas. This zone will be clearly marked with flagging or traffic cones to enclose the area prior to the start of field activities. No one will be permitted to enter the Exclusion Zone unless they are dressed in the appropriate level of PPE as designated by the SSO.
- The **Contamination Reduction Zone** is located immediately outside the Exclusion Zone. This zone is designated to limit the migration of contaminants from potentially contaminated areas to non-contaminated areas. Personnel and equipment decontamination occurs in this area.
- The **Support Zone** is located outside the Contamination Reduction Zone and is an uncontaminated area. Supporting equipment and facilities will be located in this area. Site visitors who do not possess 40-hour OSHA Health and Safety training (at a minimum) will not be permitted beyond the Support Zone.

Figure 4 presents the layout of work zones for a typical hazardous materials site. Site control is important to protect the safety and health of all contractor and non-contractor personnel. While Site control is primarily the responsibility of the Site Supervisor and SSO, it requires a combined effort from other assigned personnel to control unauthorized access to the worksite. Work zones for each site will be designated at the site safety meetings held at the beginning of each field work day or more often, if necessary, to accommodate changing field conditions. The “buddy system” will be practiced at all times.



## 8.0 DECONTAMINATION MEASURES

This section describes decontamination procedures for personnel and equipment, and disposal of PPE and decontamination materials.

### 8.1 Personnel Decontamination

All personnel that come in contact with soil in the Exclusion Zone will undergo decontamination as necessary in the Contamination Reduction Zone prior to exiting the Site. General decontamination procedures are to brush or wash and rinse as appropriate to remove contaminated materials followed by removal of PPE.

Primary decontamination will be performed at the border of the Exclusion and Contamination Reduction Zone. Between the Exclusion and Support Zones, the personnel Contamination Reduction Zone provides the transition zone between the contaminated and clean areas of the Site. The Support Zone is an uncontaminated area from which operations may be directed. It is essential that contamination from the Site be kept out of the Support Zone.

For Level D decontamination, disposable PPE will be removed, followed by a field wash (hands and face) with soap and water. Gloves and boots will be cleaned and reused, as appropriate.

Decontamination procedures for Modified Level D and Level C will be as follows:

- Brush off boots or boot covers.
- Wash boot covers and outer gloves with a long-handle brush in wash tubs containing detergent water.
- Rinse boot covers and outer gloves with water using a long-handle brush in a washtub containing potable water or by using a sprayer, if available (see comments below).
- Remove tape used to seal gloves and boots and place in the appropriate PPE container.
- Remove Tyvek™ and place in appropriate PPE container.<sup>1</sup>
- Remove PVC boots or equivalent boot covers and place in appropriate PPE container.
- Remove outer gloves and place in appropriate PPE container.
- Boots will be inspected and checked for further decontamination, if required.

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<sup>1</sup> The water of repellence of non-coated Tyvek™ and similar garments is due to the surface tension of water and the resistance of the Tyvek™ fiber to wetting. The presence of surfactants such as detergents and water defeats the water repellent properties of Tyvek™. Therefore non-coated Tyvek™ and similar fabrics should never be exposed to detergent and water solutions during the decontamination process. Such fabric will be dry wiped.



- Remove respirators (if worn) for decontamination in accordance with employer's respiratory protection program.
- Field wash (hands and face) with soap and water.

Workers will wash their hands before eating or drinking. Personnel are advised to shower as soon as possible after leaving the Site.

## **8.2 Equipment Decontamination**

The decontamination process for washing outer surfaces of sampling equipment is structured to minimize the potential for cross-contamination of samples or migration of contaminants off-Site.

Decontamination of sampling equipment is performed at the sample site prior to sampling, between sampling intervals, and after sampling to minimize potential migration of contaminants. As a rule, decontamination is performed by washing with a non-phosphate detergent solution (e.g., Alconox™) followed by a de-ionized/distilled water rinse, or by a high pressure steam cleaning (greater than 180°F and 200 pounds per square inch [psi]).

Decontamination procedures for equipment are as follows:

- All equipment will be steam cleaned or washed with soap, as appropriate. Visible soil and grease will be removed by brushing or scraping.
- The wheels of all vehicles that have been in contact with contaminated soil and/or groundwater will be cleaned prior to their exiting the Site.
- If non-aqueous phase liquids (NAPL) are present, equipment will require a more thorough wash with organic solvents such as acetone or ethanol, followed by a thorough rinse.

Contaminated equipment shall be decontaminated prior to leaving the Contamination Reduction Zone of the work site. At a minimum, heavy equipment will be decontaminated before leaving the Site. The SSO and heavy equipment operators will be jointly responsible for inspecting the heavy equipment to ensure it has been fully decontaminated prior to leaving the facility, and that all contamination procedures have been followed. Heavy equipment may be moved from a work area to a designated decontamination pad located in another part of the facility after undergoing gross decontamination at that work site. As necessary, measures will be taken to prevent the dispersion of contaminants during transport to the decontamination pad. The level of PPE required for decontamination activities will be equivalent to the highest level of PPE associated with the task that required use of the equipment.



Decontamination of small equipment will be performed at the work site. Gross contamination will be scraped or wiped off all equipment prior to washing and rinsing.

A steam cleaner or pressure washer will be set up at a designated location for heavy equipment decontamination. The minimum level of PPE to be used when operating a steam cleaner will be Modified Level D using water-resistant Tyvek™ and a hard-hat equipped with a face shield. Vehicle decontamination will be performed at the designated decontamination area. If the potential for dispersal of contaminated material is present, large equipment items will be wrapped before transport to the decontamination area.

### **8.3 Disposal of PPE and Decontamination Materials**

Residue from remediation activities shall be removed from PPE. If visual inspection indicates that residue remains on PPE, it cannot be reused and must be disposed of. Disposable PPE will be placed (double-bagged) in large plastic trash bags and stored in 55-gallon drums on-Site. Pacific States shall be responsible for recycling on-Site or containerizing, and determining the waste classification and appropriate disposal for the wastewater generated during decontamination. Rinsate from decontamination procedures should only be reused as initial wash to remove gross soil/material adhesion in the decontamination process. Subsequent wash cycles must be performed by using uncontaminated water.



## 9.0 GENERAL SAFE WORK PRACTICES

Specific requirements that all personnel must meet as a condition of Site access include the following:

- Personnel will fully comply with the requirements set forth in this SSHSP and applicable documents referenced herein.
- Personnel will report to the Site ready for work and free from the influence of alcohol, illegal or controlled substances, or prescription/non-prescription pharmaceuticals that may affect their ability to work safely.
- Personnel will report to work with safety gear required for anticipated tasks. PPE, such as hard-hats, safety glasses, boots, or gloves will not be provided or loaned to subcontractor personnel.
- Personnel are required to report all injuries and incidents to the SSO, even if considered minor.
- Personnel will follow the direction of the SSO on safety- or health-related matters, stop-work orders, or emergency evacuations.
- Personnel will sign an acknowledgement of training received and an agreement to follow the requirements of this SSHSP.
- Personnel are expected to obey existing medical or work restrictions and will inform the SSO or their employer's safety or medical officer of any potentially relevant medical conditions that may affect their safety or the safety of others.
- Personnel are expected to maintain a high level of safety awareness.
- Personnel are expected to identify unsafe conditions, damaged or inadequate PPE, and other conditions or events that they believe may be potentially hazardous.
- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material will be prohibited in any area where the possibility of contamination exists.
- Face and hands must be thoroughly washed upon leaving a contaminated or suspected contaminated area and before eating, drinking, or any other related activities transpire.
- Legible and understandable precautionary labels will be prominently affixed to containers of scrap, waste, debris, and contaminated clothing.
- Contaminated protective clothing will not be removed from the controlled area until all such clothing has been cleaned or properly packaged and labeled.





- Excessive facial hair that interferes with a satisfactory fit of the respirator mask-to-face seal will not be permitted.
- Contact with potentially contaminated substances should be avoided. Personnel should not walk through puddles, pools, or mud; kneel on the ground; lean or sit on equipment; or place monitoring equipment or tools on potentially contaminated surfaces.
- If personnel do not fulfill these responsibilities, they will be denied access to the Site.

The following work rules apply to operations requiring the use of excavation equipment:

- Equipment will be operated only on stable ground and will be maintained in a level orientation at all times.
- Equipment having outriggers will use outriggers in accordance with manufacturer's instructions.
- The SSO will monitor weather conditions. Operations will be discontinued when electrical storms are current or imminent.
- Excavation crew members will not wear loose clothing, tools, or equipment. Protective outer clothing will be taped to minimize the potential for catching in rotating machinery.
- Equipment operators will verbally alert personnel and visually ensure that personnel are clear of hazardous parts of the heavy equipment prior to starting or engaging the equipment.
- If necessary, water will be channeled away from the work area to prevent ponding.
- Water containing potentially hazardous constituents will not be permitted to run onto roadways, thoroughfares, or private property.



## **10.0 EMERGENCY PROCEDURES**

This section provides information on medical facilities and emergency procedures for work at the project Site.

### **10.1 Medical Facility**

Injuries that require more than simple first-aid measures on-Site should be treated by medical personnel at the following medical facility:

Kaiser Permanente Oakland Medical Center  
280 West McArthur Boulevard  
Oakland, California

The Site location and route to hospital map are shown on Figure 3.

### **10.2 Emergency Response Procedures**

The SSO has sole responsibility and authority for coordinating emergency response activities until proper authorities arrive and assume control. In addition, the SSO has the responsibility of ensuring that emergency medical transport has full access to the injured personnel. Cellular telephones (provided by Northgate) will be available during field activities for emergency communication.

When calling for assistance in an emergency, the following information should be provided:

- Name of caller;
- Telephone number of caller's location;
- Name(s) of person(s) exposed or injured;
- Nature of emergency; and
- Actions taken.

The recipient of the call should hang up first, **not** the caller.

The SSO will verify that the emergency medical facility will accept patients who may be contaminated, or take the necessary steps to enable such patients to be accepted to receive treatment.



Emergency telephone numbers for this project are as follows:

- Fire/Police/Medical Emergency.....911
- Kaiser Permanente Hospital.....(510) 752-7600
- Poison Control Center..... (800) 523-2222
- CHEMTREC<sup>2</sup> .....(800) 424-9300
- Pacific States Project Manager .....(925) 803-4333  
(Keith Wayne)

### **10.2.1 Emergency Medical Treatment**

If a person is physically injured, standard Red Cross first-aid procedures will be followed. Depending on the severity of the injury, emergency medical response may be sought.

If the person can be moved, he/she will be taken to the edge of the work area (on a stretcher, if needed), and emergency first-aid will be administered; the injured person can then be transported to the hospital. At least one field team member will be CPR/first-aid trained and on-Site during all field activities.

### **10.2.2 Emergency Medical Procedures**

For *severe* injuries, illness, or over-exposure:

- Remove the injured or exposed person(s) from immediate danger.
- If possible, at least partial decontamination should be completed. Wash, rinse, and/or cut off protective clothing and equipment, and re-dress the victim in clean coveralls.
- If decontamination cannot be conducted, wrap the victim in blankets or plastic sheeting to reduce contamination of other personnel.
- Immediately render emergency first-aid and call an ambulance for transport to the hospital. Notify emergency personnel of possible contaminants on-Site. (This contaminant information should be sent with the victim to the hospital.)
- Evacuate other on-Site personnel to a safe place until the SSO or Site Supervisor determines it is safe to resume work.
- Report the accident to the Project Manager and Site Supervisor and complete the appropriate Incident Report Form (Appendix A).

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<sup>2</sup> CHEMTREC + CHEMical Transportation Emergency Center



For *minor* injuries or illness:

- If needed, complete a full decontamination of the person(s).
- Administer first-aid. Minor injuries may be treated on-Site, however, all injuries will be examined by trained medical personnel. Victims of serious bites or stings will be taken to the hospital.
- Notify the Project Manager and Site Supervisor as soon as possible.

### **10.2.3 First-Aid for Chemical Injuries**

If the injury to a worker is chemical in nature, the following subsections describe first-aid procedures that should be implemented as soon as possible.

#### ***10.2.3.1 Eye Exposure***

If a contaminated solid or liquid gets into the eyes, wash eyes immediately with sterile saline solution, lifting the lower and upper eyelids occasionally. Continue eyewash for 15 minutes. Cover the eye with a dry pad and obtain medical attention immediately.

#### ***10.2.3.2 Skin Exposure***

If a contaminated solid or liquid gets on the skin, promptly wash contaminated skin area for 15 minutes using soap or mild detergent and water. If solids or liquids penetrate through the clothing, immediately remove the clothing and wash the skin using soap or mild detergent and water. Obtain medical attention immediately if symptoms of exposure develop.

### **10.2.4 First-Aid for Physical Injuries**

If a physical injury should occur, the following subsections describe procedures to be implemented

#### ***10.2.4.1 Animal Bites***

Thoroughly wash the wound with soap and water, flush the area with running water, and apply a sterile dressing. Immobilize the affected part until the victim has been attended by a physician. Detain the animal; keep alive and in quarantine. If possible, obtain the name and address of the animal's owner.



#### ***10.2.4.2 Burns (Minor)***

Do not apply Vaseline or grease of any kind to a burn. Apply cold water until pain subsides and cover with a moist, wet sterile gauze dressing. Do not break any blisters or remove tissue. Seek medical attention.

#### ***10.2.4.3 Burns (Major)***

Do not remove adhered particles of clothing. Do not apply ice or immerse wound in cold water. Do not apply ointment, grease, or Vaseline. Cover burn area with a thick sterile dressing. Keep burned feet or legs elevated. Seek medical attention immediately.

#### ***10.2.4.4 Cuts***

Apply pressure with a sterile gauze dressing and elevate the area until bleeding stops. Apply a bandage and seek medical attention.

#### ***10.2.4.5 Eye Injury***

Keep the victim from rubbing the eye. Flush affected eye with water or use available eye wash station. If flushing fails to remove the object or irritant, apply a dry, protective dressing and consult a physician.

#### ***10.2.4.6 Fainting***

Keep the victim lying down with feet elevated. Loosen tight clothing. If victim should vomit, roll him/her onto their side or turn head to the side. If necessary, wipe/clean out mouth to maintain an open airway. Bathe face gently with cold water. Seek medical attention.

#### ***10.2.4.7 Fracture***

Deformity of an injured part usually indicates a fracture. If a fracture is suspected, splint the injured part as it lies. Do not attempt to move the injured part of the person. Seek medical attention immediately.

#### ***10.2.4.8 Insect Bites***

Remove “stinger” if present. Keep affected part below the level of the heart. Apply an ice bag. For minor bites and stings, apply soothing lotions such as calamine.



#### ***10.2.4.9 Puncture Wounds***

If a puncture wound is deeper than skin surface, seek medical attention. Serious infection can arise if proper treatment is not received.

#### ***10.2.4.10 Sprains***

Elevate the injured part and apply an ice bag or cold packs. Do not soak in hot water. If pain and swelling persists, seek medical attention.

#### ***10.2.4.11 Unconsciousness***

Never attempt to give anything by mouth to an unconscious person. Keep victim flat and maintain an open airway. If victim is not breathing, provide artificial respiration using mouth-to-mouth breathing and immediately call for an ambulance and medical assistance.

### **10.2.5 Fire or Explosion**

In the event of a fire, the Fire Department will be immediately summoned. If the area is not safe, evacuate immediately. If it is safe, Site personnel may use available on-Site fire-fighting equipment to control or extinguish the fire. Use extreme caution when removing or isolating flammable or other hazardous materials that may contribute to the fire.

In the event of an explosion, all personnel will be evacuated and the Fire Department immediately notified. No person will re-enter the area until it has been cleared by fire or explosive safety personnel.

### **10.2.6 Natural Disasters**

The following procedures will be followed in the event of a natural disaster:

- *Earthquakes:* In the event of an earthquake, stop work immediately and evacuate the Site. If operating heavy equipment, the operator should immediately cease operations and shut off the equipment. Site workers should move away from heavy equipment. Work should not be resumed until a thorough Site inspection has been completed by the SSO or Site Supervisor.
- *Lightning:* Persons should not work in open areas or near trees or outside equipment during lightning storms. All work should stop until the storm passes. If necessary, clear the Site until the storm ceases.



- *High Winds:* If winds exceed 25 miles per hour and dust control measures cannot be implemented effectively, work that disturbs contaminated materials shall be suspended until the appropriate dust control measures can be implemented.
- *Evacuation:* If an evacuation is called, all personnel shall be accounted for before leaving the Site.

The Project Manager and SSO should be notified if work at the Site should stop due to any natural disaster.

### **10.3 Emergency Equipment**

Emergency equipment will be stored at appropriate on-Site locations during Site mobilization. Emergency response equipment may be moved from one location to another based on changing locations of field activities. The following is a list of on-Site emergency equipment that should be provided and maintained on-Site:

- Fire extinguisher (20-pound A/B/C type);
- Industrial first-aid kit (fully-stocked);
- Drinking water or Gatorade;
- Emergency eye wash station rated for 15 minutes; and
- Air horn.

### **10.4 Accident/Incident Reporting**

In the event of an incident the Project Manager, Site Supervisor, and SSO will be notified. The following types of incidents are considered reportable:

- Physical injury (a log of the first aid administered on-Site will be maintained).
- Fire or explosives resulting from activities performed by Northgate and its subcontractors, including any infractions of safety rules and requirements.
- Unexpected chemical exposures.
- Near-accidents.
- Vehicular accidents.
- Accidents resulting in property damage (including private property).
- Injuries to public persons
- Animal or vermin bites.



The following types of incidents are to be reported by the quickest available means to Project Manager, Site Supervisor, and SSO:

- Those likely to result in death or permanent disability.
- Those requiring hospitalization.
- Those involving two or more employees.
- Those that are likely to receive coverage by news media (to allow notification of family members by the company beforehand, if possible).
- Those involving collapse, cave-in, or other failure of structures or equipment.
- Serious accidents involving equipment or vehicles.

Work will be suspended to correct the cause of the incident and to modify this SSHSP, if necessary.





## **11.0 MEDICAL SURVEILLANCE AND TRAINING**

### **11.1 Medical Surveillance**

Any person present on-Site during work activities who may be exposed to health hazards related to Site operations will be required to undergo an occupational health assessment examination. Site visitors must show proof of an annual medical examination if requesting access to restricted work areas where respirators are required. A worker or Site visitor who cannot provide a physician's statement or other acceptable documentation stating that he/she is physically qualified to work with toxic and/or hazardous materials, and trained to wear a negative-pressure respirator (if such use required) will be restricted from entry where potential exposure is possible.

Workers who are required to use respiratory protection will be fully qualified through their employer's surveillance program. Each user of respiratory protection will be qualified by a physician's statement, which includes a physician's respirator use certification and an annual fit test.

### **11.2 Training**

This section describes the type and frequency of safety training required for personnel assigned to field operations at the project Site.

#### **11.2.1 Safety Training**

On-Site employees required to work in the Exclusion Zone must obtain health and safety clearances prior to beginning work at the Site. Personnel assigned to field operations must:

- Participate in a medical surveillance program in accordance with 29 CFR 1910.120(f), with subsequent certification by an occupational physician of physical fitness and have the ability to perform the assigned fieldwork. The physician's certification shall include a statement of qualification for use of respiratory protection equipment.
- Participate in a hearing conservation program, in accordance with CCR, Title 8, Section 5097, and 29 CFR 1910.95. In general, the use of earplugs or earmuffs is mandatory when noise prevents conversation in a normal voice at a distance of 3 feet. This "rule of thumb" is an indication that noise levels may exceed the OSHA action level of 85 decibels.
- Successfully completed a 40-hour basic health and safety training course and an annual 8-hour Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) refresher training for field personnel in accordance with 29 CFR 1910.120(e)(1) and 8CCR 5192. Workers on-Site for a specific limited task (i.e., delivery personnel) who are



unlikely to be exposed to levels over established PELs, can receive a minimum of 24-hours of instruction on OSHA requirements.

In accordance with regulatory requirements, employees without documentation of supervised field experience will be monitored to work under close direction until they have completed 24 hours of supervised field experience. This experience will be documented by the employer upon completion.

The Site Supervisor must have successfully completed either a 40-hour basic health and safety training course or an 8-hour health and safety refresher course [29 CFR 1910.120(e)(8)] within a year previous to the anticipated start of the field work, in addition to other clearance requirements. The Site Supervisor must also have successfully completed an 8-hour supervisory health and safety course [29 CFR 1910.120(e)(4)] prior to the start of the fieldwork. The SSO must also have completed the 8-hour supervisory training for hazardous waste operations.

The SSO and additional on-Site personnel must hold a valid certificate for first-aid training and CPR from the American Red Cross, or an equivalent agency.

On-Site personnel who are required to work in the Exclusion Zone must provide documentation of medical surveillance and other required training before beginning fieldwork. Copies of all documentation must be kept on-Site at all times.

Visitors to the work site (such as regulatory personnel) must first receive a Site-specific briefing by the SSO as noted below in Section 11.2.2. Visitors entering the Exclusion Zone must provide the SSO with documentation of any training required to obtain health and safety clearance as stated above. Visitors who are unable to furnish this documentation will not be allowed to enter the Exclusion or Contamination Reduction Zones. Visitors that fail to provide documentation and still demand to enter these zone areas will be referred to the SSO. The SSO will then handle the situation appropriately to prevent the visitor(s) from entering these zones, including contacting the Site Supervisor or Project Manager, as necessary. If any person does not have clearance from the SSO to enter the Exclusion or Contamination Reduction Zone and does enter these restricted areas, work will immediately cease and the SSO and Site Supervisor will be notified. The interruption in work will be documented in the SSO's notebook and documentation will include, at a minimum, the duration of the interruption, date, name of personnel in the Exclusion Zone and/or Contamination Reduction Zone, work activity being performed, and any other information on the unauthorized person(s) entering the zones.



### **11.2.2 Daily Safety Briefings**

Daily Site-specific safety briefings will be conducted by the SSO prior to commencement of work on-Site. All on-Site personnel will be required to attend the briefing. Personnel who are new to the Site after work has commenced will be given this briefing prior to entering any exclusion and/or restricted zone. A copy of this SSHSP must be accessible to each person working on the Site. At the end of each daily meeting, attendees will sign a Safety Compliance Agreement and Documentation of Site Safety Form (Appendix A) stating they have been briefed on, understand and agree to comply with the provisions of this SSHSP. Individuals refusing to sign the agreement will be prohibited from working at the Site. This agreement form is to be completed and maintained in the Site files.

The briefing will include the following topics:

- Names of personnel and alternates responsible for Site safety and health.
- Medical surveillance and training requirements.
- Site hazards (physical, chemical or biological).
- Symptoms of over-exposure to COCs.
- Emergency response procedures and location of emergency equipment.
- Prevention, symptoms, and treatment for heat stress.
- PPE (initial PPE levels, action levels).
- Location of emergency numbers and route to hospital.
- Decontamination procedures.

### **11.2.3 Distribution of Site Safety and Health Plan**

Before Site work begins, access to a copy of this SSHSP must be provided to personnel assigned to work at the Site, as well as to all authorized representatives of each firm contracted to perform work on the Site. The SSO is responsible for ensuring that a copy of the SSHSP is available on-Site whenever work is in progress and providing a copy of this SSHSP to any workers entering the Site.



## 12.0 REFERENCES

California Occupational Health and Safety Administration, California Code of Regulations, Title 8, Part 5192, *Hazardous Waste Operations and Emergency Response*.

California Department of Water Resources, 1978, Bulletin No. 188-6: Evaluation of Groundwater Resources: Sacramento Valley, 136 pages.

Erler and Kalinowski, Inc., *Contract Documents for Former ORP/Building 1 Area Remediation Project- EDC Area, Oakland, California*, January, 2005.

Erler and Kalinowski, Inc., *Draft Remedial Design and Implementation Plan- EDC Area, Oakland, California*, February 9, 2004.

Erler and Kalinowski, Inc., *Final Remedial Action Plan, Oakland Army Base, Oakland, California*, September 27, 2002

Erler and Kalinowski, Inc., *Final Risk Management Plan, Oakland Army Base, Oakland, California*, September 27, 2002.

Occupational Health and Safety Administration, Title 29, Code of Federal Regulations, Part 1910.120, *Hazardous Waste Operations and Emergency Response*.

Occupational Health and Safety Administration, Title 29, Code of Federal Regulations, Part 1910.134, *Respiratory Protection*.

Sax, N. Irving and Lewis, Richard J., *Hazardous Chemicals Desk Reference*, 1987.

U.S. Army Corps of Engineers, Engineer Manual (EM) 385-1-1, *Safety and Health Requirements*, September 1996.



## **TABLES**



**TABLE 1**  
**Toxicological Properties of Suspected Chemical Substances**  
**Former ORP/ Building 1 Area**  
**Former Oakland Army Base, Oakland, California**

CHEMICAL SUBSTANCE	Cal/OSHA PEL <sup>1</sup> (ppm*)	Cal/OSHA STEL <sup>2</sup> (ppm*)	CalOSHA CL <sup>3</sup> (ppm*)	IDLH <sup>4</sup> (ppm*)	VAPOR PRESSURE <sup>5</sup>	SPECIFIC GRAVITY <sup>6</sup>	PRINCIPLE ROUTES OF EXPOSURE	EXPOSURE EFFECTS / SYMPTOMS	
								Acute	Chronic
METALS									
Arsenic (inorganic compounds)	TWA 0.010 mg/m3	--	--	Ca [5 mg/m3 (as As)]	0 mmHg (approx)	5.73 (metal)	inhalation, skin absorption, skin and/or eye contact ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin	lung & lymphatic cancer
Arsenic (organic compounds)	TWA 0.2 mg/m3	--	--	Ca [5 mg/m3 (as As)]					
Barium (soluble compounds)	TWA 0.5 mg/m3	--	--	50 mg/m3 (as Ba)	Low	3.86	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia	
Cadmium	TWA 0.005 mg/m3	--	--	Ca [9 mg/m3 (as Cd)]	0 mmHg (approx)	8.65 (metal)	inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia	prostatic & lung cancer
Chromium (II, III)	TWA 0.5 mg/m3	--	--	250 mg/m3 (as Cr)	0 mmHg (approx)	7.14	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin	lung fibrosis (histologic)
Chromium (VI)	TWA 0.1 mg/m3	--	0.1 mg/m3						
Copper	TWA 1 mg/m3	--	--	100 mg/m3 (as Cu)	0 mmHg (approx)	8.94	inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; cough, dyspnea (breathing difficulty), wheezing	potential occupational carcinogen
Lead	TWA 0.05 mg/m3	--	--	100	0 mmHg (approx)	11.34	inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; irritation eyes; hypotension	Kidney, blood, and nervous system effects

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**Toxicological Properties of Suspected Chemical Substances**  
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CHEMICAL SUBSTANCE	Cal/OSHA PEL <sup>1</sup> (ppm*)	Cal/OSHA STEL <sup>2</sup> (ppm*)	CalOSHA CL <sup>3</sup> (ppm*)	IDLH <sup>4</sup> (ppm*)	VAPOR PRESSURE <sup>5</sup>	SPECIFIC GRAVITY <sup>6</sup>	PRINCIPLE ROUTES OF EXPOSURE	EXPOSURE EFFECTS / SYMPTOMS	
								Acute	Chronic
Nickel	TWA 1 mg/m3	--	--	Ca [10 mg/m3 (as Ni)]	0 mmHg (approx)	8.90 (Metal)	inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis	lung and nasal cancer
Nickel (soluble)	TWA 0.1 mg/m3	--	--	Ca [10 mg/m3 (as Ni)]	0 mmHg (approx)	8.90 (Metal)	inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis	lung and nasal cancer
Vanadium	TWA 0.5 mg V2O5/m3	--	--	35 mg/m3 (as V)	0 mmHg (approx)	3.36	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; green tongue, metallic taste, eczema; cough; fine rales, wheezing, bronchitis, dyspnea (breathing difficulty)	
Zinc (As particulates not otherwise regulated - total)	TWA 10 mg/m3	--	--	--	--	--	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; conjunctivitis; cough, copious sputum; dyspnea (breathing difficulty), chest pain, pulmonary edema, pneumonitis; pulmonary fibrosis, cor pulmonale; fever; cyanosis; tachypnea; skin burns	Potential occupational carcinogen
Zinc (As particulates not otherwise regulated - respirable fraction)	TWA 5 mg/m3	--	--						
PETROLEUM HYDROCARBONS									
TPH-d	--	--	--	--	low	0.87 – 0.90	Inhalation, ingestion, skin contact	Headaches, dizziness, nausea, fatigue	None known
TPH-mo	--	--	--	--	low	0.9	Inhalation, ingestion, skin contact	See TPH-d	See TPH-d
PCBs (as Chlorodiphenyl, 42% chlorine)	TWA 1 mg/m3 [skin]	--	--	Ca [5 mg/m3]	0.00006 mmHg	(77°F): 1.38	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects	potential occupational carcinogen [in animals: tumors of the pituitary gland & liver, leukemia]
PCBs (as Chlorodiphenyl, 54% chlorine)	TWA 0.5 mg/m3 [skin]	--	--	Ca [5 mg/m3]					
PAHs									
acenaphthene	--	--	--	--	0.0025 mm Hg	1.024	inhalation, skin and/or eye contact	Irritation to eyes, skin, & respiratory system.	Gastrointestinal or Liver Toxicant

**TABLE 1**  
**Toxicological Properties of Suspected Chemical Substances**  
**Former ORP/ Building 1 Area**  
**Former Oakland Army Base, Oakland, California**

CHEMICAL SUBSTANCE	Cal/OSHA PEL <sup>1</sup> (ppm*)	Cal/OSHA STEL <sup>2</sup> (ppm*)	CalOSHA CL <sup>3</sup> (ppm*)	IDLH <sup>4</sup> (ppm*)	VAPOR PRESSURE <sup>5</sup>	SPECIFIC GRAVITY <sup>6</sup>	PRINCIPLE ROUTES OF EXPOSURE	EXPOSURE EFFECTS / SYMPTOMS	
								Acute	Chronic
anthracene	TWA 0.2 mg/m3 (benzene- or cyclohexane- soluble fraction)	--	--	Ca [80 mg/m3]	2.67x10-6 mm Hg	1.24	inhalation, skin and/or eye contact	Dermatitis, bronchitis, photosensitivity, nausea, loss of appetite, and inflammation of the gastrointestinal tract. Also reported were headache, slow reactions, and weakness.	Potential occupational lung, kidney & skin carcinogen
benzo(a)anthracene	TWA 0.2 mg/m3 (benzene- or cyclohexane- soluble fraction)	--	--	Ca [80 mg/m3]	2.2x10-8 mm Hg	--	inhalation, skin and/or eye contact	Not reported.	Probable human carcinogen.
benzo(a)pyrene	TWA 0.2 mg/m3 (benzene- or cyclohexane- soluble fraction)	--	--	Ca [80 mg/m3]	--	--	inhalation, skin and/or eye contact	Dermatitis, bronchitis	lung, kidney & skin cancer
benzo(b)fluoranthene	TWA 0.2 mg/m3 (benzene- or cyclohexane- soluble fraction)	--	--	Ca [80 mg/m3]	--	--	inhalation, skin and/or eye contact	None known	Potential occupational carcinogen
chrysene	TWA 0.2 mg/m3 (benzene- or cyclohexane- soluble fraction)	--	--	Ca [80 mg/m3]	6.3x10-9 mm Hg	1.274	Inhalation, ingestion, skin contact	Dermatitis, bronchitis	Confirmed animal carcinogen. Probable lung, kidney & skin human carcinogen.
dibenz(a,h) anthracene	--	--	--	--	1 10-10 mm Hg at 20C	1.282	inhalation, ingestion, skin and/or eye contact	Redness, swelling, or itching skin. Redness in eyes.	Potential occupational carcinogen. Skin irritation & photosensitization.
dibenzofuran	--	--	--	--	0.0044 mm Hg	1.0886 at 99/4 degrees	Inhalation, ingestion, skin contact	No information is available.	No information is available.
fluoranthene	--	--	--	--	9.2E-6 (at 77 °F)	1.252 (at 32 °F)	Inhalation, ingestion, skin contact	Irritation to eyes, skin, or respiratory system.	Blood effects, kidney effects



**TABLE 1**  
**Toxicological Properties of Suspected Chemical Substances**  
**Former ORP/ Building 1 Area**  
**Former Oakland Army Base, Oakland, California**

CHEMICAL SUBSTANCE	Cal/OSHA PEL <sup>1</sup> (ppm*)	Cal/OSHA STEL <sup>2</sup> (ppm*)	CalOSHA CL <sup>3</sup> (ppm*)	IDLH <sup>4</sup> (ppm*)	VAPOR PRESSURE <sup>5</sup>	SPECIFIC GRAVITY <sup>6</sup>	PRINCIPLE ROUTES OF EXPOSURE	EXPOSURE EFFECTS / SYMPTOMS	
								Acute	Chronic
fluorene	--	--	--	--	8.42E-03	1.2 (at 32 °F)	Inhalation, ingestion, skin contact	Irritation to eyes, skin, or respiratory system.	Blood effects; Shows evidence in laboratory animals of mutagenic properties
2-Methylnaphthalene	--	--	--	--	6.81x10-2 mm Hg at 25 deg C	--	Skin contact	Skin irritation & photosensitization.	Respiratory Toxicant
naphthalene	TWA 10 ppm (50 mg/m3)	15 ppm (75 mg/m3)	--	250 ppm	0.08 mmHg	1.15	inhalation, ingestion, skin and/or eye contact	Dizziness, nose, throat, skin, and eye irritation; olfactory changes, CNS effects, distortion, hallucination	Cataracts
phenanthrene	TWA 0.2 mg/m3 (benzene- or cyclohexane- soluble fraction)	--	--	Ca [80 mg/m3]	1.12x10-4 mm Hg	1.063	inhalation, skin and/or eye contact	Dermatitis, bronchitis	Potential occupational lung, kidney & skin carcinogen
pyrene	TWA 0.2 mg/m3 (benzene- or cyclohexane- soluble fraction)	--	--	Ca [80 mg/m3]	4.5x10-6 mm Hg	1.271	inhalation, skin and/or eye contact	Dermatitis, bronchitis	Potential occupational lung, kidney & skin carcinogen
<b><i>DIOXIN-LIKE COMPOUNDS</i></b>									
1,2,3,7,8- Pentachlorodibenzofuran	--	--	--	--	--	--	--	--	Carcinogen.
2,3,7,8- Tetrachlorodibenzofuran	--	--	--	--	--	--	--	--	Carcinogen, Suspected Endocrine Toxicant, Skin or Sense Organ Toxicant
Pentachlorinated dibenzofurans, total	--	--	--	--	--	--	--	--	Carcinogen.
Tetrachlorinated dibenzofurans, total	--	--	--	--	--	--	--	--	Carcinogen, Suspected Endocrine Toxicant, Skin or Sense Organ Toxicant

**TABLE 1**  
**Toxicological Properties of Suspected Chemical Substances**  
**Former ORP/ Building 1 Area**  
**Former Oakland Army Base, Oakland, California**

CHEMICAL SUBSTANCE	Cal/OSHA PEL <sup>1</sup> (ppm*)	Cal/OSHA STEL <sup>2</sup> (ppm*)	CalOSHA CL <sup>3</sup> (ppm*)	IDLH <sup>4</sup> (ppm*)	VAPOR PRESSURE <sup>5</sup>	SPECIFIC GRAVITY <sup>6</sup>	PRINCIPLE ROUTES OF EXPOSURE	EXPOSURE EFFECTS / SYMPTOMS	
								Acute	Chronic
VOLATILE ORGANIC COMPOUNDS									
acetone	TWA 750 ppm (1780 mg/m3)	TWA 1000 ppm (2400 mg/m3)	3000 ppm (7120 mg/m3)	2500 ppm [10%LEL]	180 mmHg	0.79	inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	
carbon tetrachloride	TWA 2 ppm (12.6 mg/m3)	TWA 10 ppm (63 mg/m3)	200 ppm (1260 mg/m3)	Ca [200 ppm]	91 mmHg	1.59	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, dizziness, incoordination	potential occupational carcinogen [in animals: liver cancer]
1,2,3-Trichloropropane	TWA 10 ppm (60 mg/m3)	--	--	Ca [100 ppm]	3 mmHg	1.39	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; central nervous system depression; in animals: liver, kidney injury	potential occupational carcinogen [in animals: forestomach, liver & mammary gland cancer]
xylenes	TWA 100 ppm (435 mg/m3)	150 ppm (655 mg/m3)	300 ppm	900 ppm	7-9 mmHg	0.86-0.88	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys damage
PORTLAND CEMENT	50 million particles/ ft^3, 10 mg total dust/ m^3, or 5 mg respirable dust/m^3	--	--	--	--	3.15	eye contact, skin contact, inhalation, & ingestion	Irreversible skin or eye tissue destruction (caustic or third degree burns). Nose, throat, & respiratory tract irritation.	Ulcers, infection, coughing, expectoration, exertional dyspnea, skin redness, blistering, burns, and raised itching areas characteristic of hives.

**NOTES**

<sup>1</sup> PEL = Permissible Exposure Limit: A time-weighted average concentration for an 8-hour work day/40-hour week in which nearly all workers may routinely be exposed without adverse effects.

<sup>2</sup> STEL = Short Term Exposure Limit; A 15-minute time-weighted average exposure which is not to be exceeded at any time during a workday even if the 8-hour time-weighted average is below the PEL.

<sup>3</sup> CL = Ceiling Limit; The maximum concentration of an airborne contaminant to which an employee may be exposed at any time.

<sup>4</sup> IDLH = Immediately Dangerous to Life or Health

<sup>5</sup> Vapor Pressure expressed in millimeters, Hg at 68°F unless otherwise noted.

<sup>6</sup> Specific Gravity at 68°F unless otherwise noted.

ppm\* = units specified in parts per million (in air), unless otherwise noted

mg/m3 = milligrams per cubic meter.

-- = Not Applicable/Not Established

**TABLE 2**  
**Health and Safety Position Responsibilities**  
**Former Oakland Army Base, Oakland, California**

POSITION / PERSONNEL	RESPONSIBILITIES	AUTHORITIES
<i><b>Project Manager</b></i>	<ul style="list-style-type: none"> <li>• Ensure that the project is performed in such a manner consistent with the Pacific States Health and Safety program.</li> <li>• Ensure that the project Site-Specific Health and Safety Plan (SSHSP) is prepared, approved, and properly implemented.</li> <li>• Coordinate with the Certified Industrial Hygienist and project team members on health and safety activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign CIH to project and if needed, an appropriately qualified replacement.</li> <li>• Suspend field activities if health and safety of personnel are endangered, pending an evaluation by the CIH.</li> <li>• Suspend an individual from field activities for infractions of the SSHSP, pending an evaluation by the Site Safety Officer (SSO) and/or the CIH.</li> </ul>
<i><b>Certified Industrial Hygienist (CIH)</b></i>	<ul style="list-style-type: none"> <li>• Audit key aspects of the SSHSP.</li> <li>• Provide leadership for the occupational safety and hygiene of personnel.</li> <li>• Investigate reports of incidents or accidents.</li> <li>• Develop or review, approve/disapprove of all project health and safety plans.</li> </ul>	<ul style="list-style-type: none"> <li>• Approve the health and safety qualifications of employees.</li> <li>• Approve/disapprove of project health and safety plans.</li> <li>• Suspend work on any project that jeopardizes the health and safety of personnel.</li> <li>• Assign SSO(s) to project and if needed, an appropriately qualified replacement.</li> <li>• Assign suitably qualified replacement for CIH, if needed.</li> </ul>
<i><b>Site Supervisor</b></i>	<ul style="list-style-type: none"> <li>• Administer the health and safety program at the site and provide recommendations for improvements to the program.</li> <li>• Maintain a working understanding of key health and safety regulations and Pacific State's health and safety policies.</li> <li>• Interface with Project Manager in health and safety matters.</li> <li>• Report to the CIH on health and safety issues.</li> <li>• Conduct staff orientations on health and safety related activities at the site.</li> <li>• Monitor compliance with the SSHSP and conduct site audits.</li> <li>• Determine if an accidental exposure where injury merits a change in the affected individuals work assignments and if changes in work practices are required.</li> <li>• Respond to employee questions/concerns regarding health and safety.</li> </ul>	<ul style="list-style-type: none"> <li>• Suspend work or otherwise limit exposure to personnel if health and safety risks are unacceptable.</li> <li>• Direct personnel to change work practices if existing procedures are deemed to be hazardous to the health and safety of personnel.</li> <li>• Suspend and/or remove personnel from the project if their actions or physical condition endangers their health and safety or that of any other employee/co-worker.</li> <li>• Suspend work on any project that jeopardizes the health and safety of personnel.</li> </ul>

**TABLE 2**  
**Health and Safety Position Responsibilities**  
**Former Oakland Army Base, Oakland, California**

POSITION / PERSONNEL	RESPONSIBILITIES	AUTHORITIES
<i>Site Safety Officer (SSO)</i>	<ul style="list-style-type: none"> <li>• Direct health and safety activities on-site.</li> <li>• Immediately report all safety-related incidents or accidents to the CIH and Site Supervisor.</li> <li>• Assist in all aspects of implementing the SSHSP.</li> <li>• Confirm with emergency medical facility that emergency procedures are defined, including access of medical transport to job sites and secured areas.</li> <li>• Coordinate and implement emergency procedures, as required.</li> <li>• Review certifications and medical surveillance status of all personnel prior to site access.</li> <li>• Maintain health and safety equipment on-site.</li> <li>• Conduct the review and acceptance of the SSHSP by all personnel.</li> <li>• Conduct and document daily health and safety briefings.</li> <li>• Maintain all site-related health and safety documentation and forms.</li> </ul>	<ul style="list-style-type: none"> <li>• Temporarily suspend field activities if health and safety of personnel is endangered, pending further consideration by the CIH.</li> <li>• Temporarily suspend an individual/employee from field activities for infractions of the SSHSP, pending an evaluation by the CIH and/or Site Supervisor.</li> </ul>

**TABLE 3**  
**Task-Specific Hazard Classifications**  
**Former Oakland Army Base, Oakland, California**

CATEGORY/TYPICAL ACTIVITY	SUBSTANTIAL PHYSICAL OR OTHER SAFETY HAZARD	CHEMICAL CONTAMINATION OR OTHER HEALTH HAZARD
<b><u>Non-Intrusive Activity</u></b> Site reconnaissance Survey Utility clearance	None present None present None present	None present None present None present
<b><u>Low Hazard Activity</u></b> Soil and groundwater sampling Monitoring well development and operation and maintenance (O&M) well measurements Utility clearance	None present None present None present	Present Present None present
<b><u>Moderate Hazard Activity</u></b> Drilling and excavation Equipment decontamination	Present Present	Present Present

**TABLE 4**  
**Job Hazard Analysis Summary**  
**Former ORP/Building 1 Area**  
**Former Oakland Army Base, Oakland, California**

<b>FIELD ACTIVITY</b>	<b>POTENTIAL HAZARDS</b>	<b>RECOMMENDED CONTROLS</b>	<b>EQUIPMENT</b>	<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
<b>Soil and groundwater sampling</b>	Slips, trips or falls; exposure to elevated concentrations of hazardous constituents; heat stress, cut and/or bruises	Do not walk or climb where footing is unstable or unreliable; exercise care for unseen obstacles; practice “buddy system” at all times	Use modified Level D or C PPE as covered in Table 6 of the SSHSP; first-aid kit	Daily inspection of equipment and eye wash station; complete daily health and safety checklist	Minimum 40-hour HAZWOPER with 3-day supervised on-the-job training; 8-hour annual refresher; CPR/first-aid
<b>Potholing, utility cut and cap, and gas line purging</b>	Slips, trips or falls; exposure to elevated concentrations of hazardous constituents; heat stress, cut and/or bruises; rotating or moving equipment; potential exposure to ignition, fire explosion, shock, or corrosivity, and confined space hazards	Do not stand within 10 feet of operating equipment unless performing a specific task; exercise care for unseen obstacles; practice “buddy system” at all times and “retrieval system” when working in confined spaces; conduct air monitoring as covered in Section 5.0 of the SSHSP	Use modified Level D or C PPE as covered in Table 6 of the SSHSP; first-aid kit	Daily inspection of equipment and eye wash station; complete daily health and safety checklist; daily testing of emergency shut-off systems	Minimum 40-hour HAZWOPER with 3-day supervised on-the-job training; 8-hour annual refresher; CPR/first-aid
<b>Monitoring well development and measurement</b>	Slips, trips or falls; exposure to elevated concentrations of hazardous constituents; heat stress, cut and/or bruises	Do not walk or climb where footing is unstable or unreliable; exercise care for unseen obstacles; practice “buddy system” at all times	Use Level D PPE as covered in Table 6 of the SSHSP; first-aid kit	Daily inspection of equipment and eye wash station; complete daily health and safety checklist	Minimum 40-hour HAZWOPER with 3-day supervised on-the-job training; 8-hour annual refresher; CPR/first-aid
<b>Excavation</b>	Slips, trips or falls; exposure to elevated concentrations of hazardous constituents; heat stress, cut and/or bruises; rotating or moving equipment	Do not stand within 10 feet of operating equipment unless performing a specific task; do not walk or climb where footing is unstable or unreliable; exercise care for unseen obstacles; practice “buddy system” at all times	Use modified Level D or C PPE as covered in Table 6 of the SSHSP; first-aid kit	Daily inspection of equipment and eye wash station; complete daily health and safety checklist; daily testing of excavation emergency shut-off systems	Minimum 40-hour HAZWOPER with 3-day supervised on-the-job training; 8-hour annual refresher; CPR/first-aid
<b>Equipment decontamination</b>	Slips, trips or falls; exposure to elevated concentrations of hazardous constituents; heat stress, cut and/or bruises	Do not walk or climb where footing is unstable or unreliable; exercise care for unseen obstacles; practice “buddy system” at all times	Use modified Level D PPE as covered in Table 6 of the SSHSP; first-aid kit	Daily inspection of equipment and eye wash station; complete daily health and safety checklist	Minimum 40-hour HAZWOPER with 3-day supervised on-the-job training; 8-hour annual refresher; CPR/first-aid

NOTES

SSHSP – Site-Specific Health and Safety Plan

HAZWOPER – Hazardous waster operator training

PPE – Personal protective equipment

**TABLE 5**  
**Action Levels**  
**Former Oakland Army Base, Oakland, California**

EQUIPMENT	MEASURED PARAMETER	ACTION LEVEL <sup>1</sup>	ACTION TO BE IMPLEMENTED
<b>Photoionization Detector (PID) with 10.2 eV bulb source (min)</b>	Total ionizable organic vapors in air	0 to <5 ppm <sup>2</sup> (15 min TWA <sup>3</sup> )	No action required
		5 to 49 ppm in (15 min TWA)	Stop work until PID breathing zone falls to less than 5 ppm for 15 consecutive minutes, <b>OR</b> Upgrade to Level C until breathing zone PID readings are less than 5 ppm for 15-min TWA. Notify SSO, SS and CIH Notify CIH and PM if this occurs more than 3 times daily
		> 50 ppm	Notify SSO and SS, AND Stop work until if PID breathing zone falls to less than 50 ppm, <b>OR</b> Notify CIH and PM to review Level B procedures before implementing, AND Upgrade to Level B until breathing zone PID readings are less than 50 ppm.
<b>LEL Monitor</b>	Explosive atmosphere	<5% LEL <sup>4</sup> at borehole/excavation	No action required
		5% to <10% LEL at borehole/excavation	Continue working. Add PID monitoring. Use criteria above
		10% to <20% at borehole/excavation	Permit only classified electrical equipment and non-sparking tools
		>10% LEL in confined space or 20% LEL at borehole/excavation	Stop work; notify SSO, SS and PM

**TABLE 5 (Cont'd)**  
**Action Levels**  
**Former Oakland Army Base, Oakland, California**

EQUIPMENT	MEASURED PARAMETER	ACTION LEVEL <sup>1</sup>	ACTION TO BE IMPLEMENTED
<b>Dust Monitor</b>	Total dust (PM <sub>10</sub> )	0 to 1,000 µg/m <sup>3(5)</sup> (5 min-TWA)	No action required
		> 1,000 µg/ m <sup>3</sup> (5 min-TWA)	Stop work; notify SSO, SS and PM; implement additional dust control measures.
<b>Lead Sample</b>	Airborne lead	< 50 µg/ m <sup>3</sup>	No Action required
		51 µg/ m <sup>3</sup> to 500 µg/ m <sup>3</sup>	Level C (half face respirator)
		501 µg/ m <sup>3</sup> to 2,500 µg/ m <sup>3</sup>	Level C (full -face respirator)
		> 2,501 µg/ m <sup>3</sup>	Notify SSO and SS, AND Stop work until if Lead Sample analysis results for the breathing zone are less than 2,501 µg/ m <sup>3</sup> , <b>OR</b> Notify CIH and PM to review Level B procedures before implementing, AND Upgrade to Level B until breathing zone Lead Sample analysis results are less than 2,501 µg/ m <sup>3</sup> .

**FOOTNOTES**

1. All action levels are either breathing zone measurements or measurements taken from locations representative of employee exposure, unless otherwise indicated.
2. ppm indicates parts per million by volume
3. TWA indicates time weighted average
4. LEL indicates lower explosive limit
5. µg/m<sup>3</sup> indicates micrograms per cubic meter of air



**TABLE 6**  
**PPE Levels and On-Site Equipment**  
**Former Oakland Army Base, Oakland, California**

PPE LEVEL	REQUIRED PPE
<b>Level D</b>	<ul style="list-style-type: none"> <li>• Disposable coverall, cotton coveralls or appropriate work clothes</li> <li>• Safety vest</li> <li>• Safety glasses with side shields.</li> <li>• Steel-toed shoes/boots</li> <li>• Hard-hat (where overhead hazards exist)</li> <li>• Ear protection (in high noise areas)</li> </ul>
<b>Modified Level D</b>	<ul style="list-style-type: none"> <li>• Water-resistant Tyvek™ (or equivalent) coveralls (where contact with contaminated groundwater or wet soils, absent of a determination of background or no significant risk, is likely)</li> <li>• Plain Tyvek (or equivalent) coveralls (where contact with dry soils contaminated with minimal quantities of petroleum products is likely)</li> <li>• Nitrile gloves</li> <li>• Safety glasses with side shields</li> <li>• Steel-toed shoes/boots</li> <li>• Disposable shoe covers (or equivalent)</li> <li>• Hard-hat</li> <li>• Ear protection (in high noise areas)</li> </ul>
<b>Level C</b> (see Table 5 for criteria)	<ul style="list-style-type: none"> <li>• Water-resistant Tyvek™ (or equivalent) coveralls (where contact with contaminated groundwater or wet soils, absent of a determination of background or no significant risk, is likely)</li> <li>• Plain Tyvek (or equivalent) coveralls (where contact with dry soils contaminated with minimal quantities of petroleum products is likely)</li> <li>• Nitrile gloves.</li> <li>• Safety glasses with side shields</li> <li>• Steel-toed shoes/boots</li> <li>• Disposable shoe covers (or equivalent)</li> <li>• Hard-hat</li> <li>• Ear protection (in high noise areas)</li> <li>• Full-face respirator, or half-face respirator with a combination of HEPA filters, acid-gas, and organic vapor cartridges</li> </ul>
<b>Level B</b>	<ul style="list-style-type: none"> <li>• As Level C, but with air supplied (Type C) respirators after review with CIH. See Table 5 for criteria for use</li> </ul>
<b>Equipment Required</b>	<ul style="list-style-type: none"> <li>• Cellular telephones or two-way radio; one required for each field team</li> <li>• First-aid kit and eye wash (rated for 15 minutes)</li> <li>• Map of proposed sampling locations and nearest emergency services personnel and Site Safety Officer (SSO) to assist in location of personnel in the event of an emergency</li> </ul>

NOTES

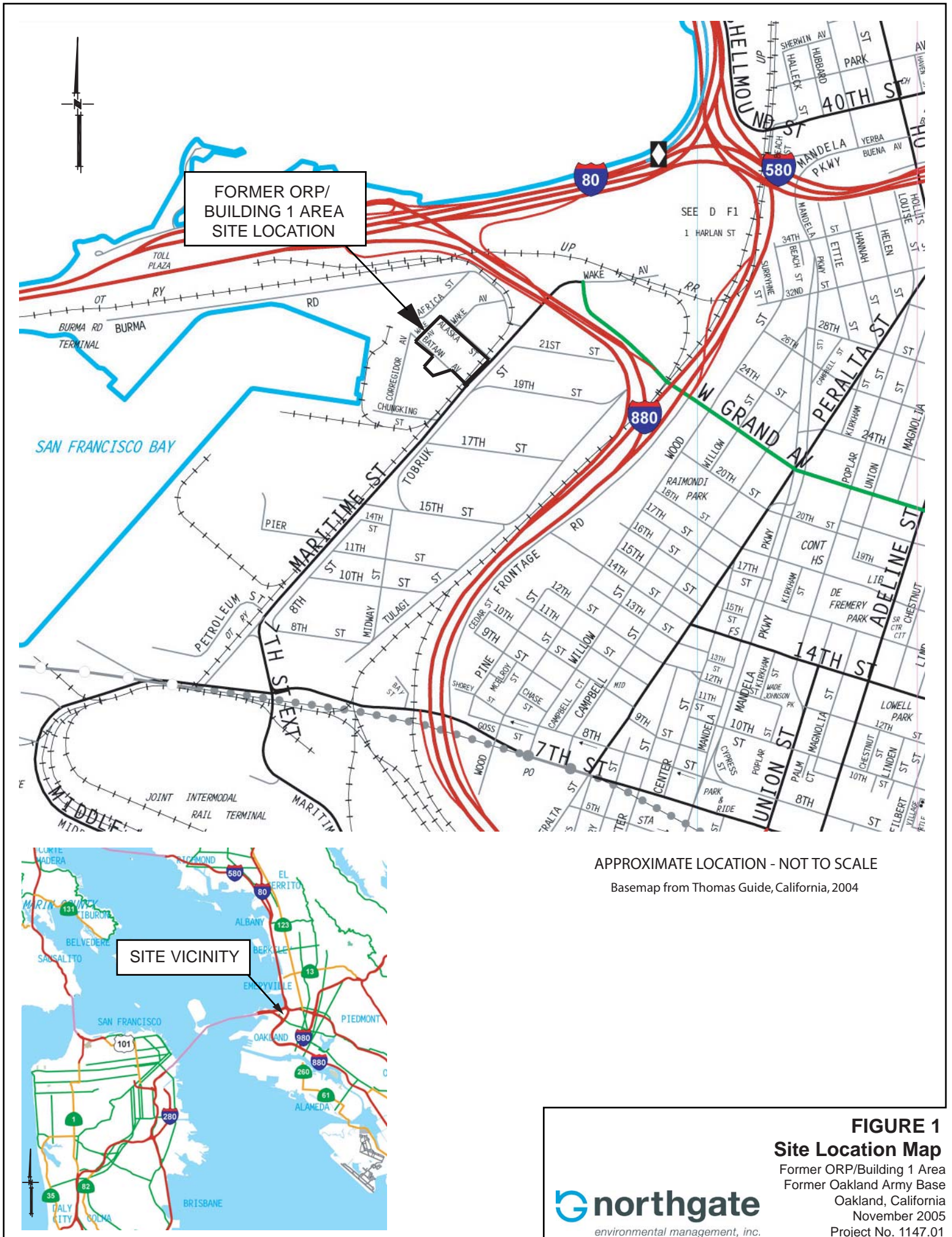
HEPA – High Efficient Particulate Air

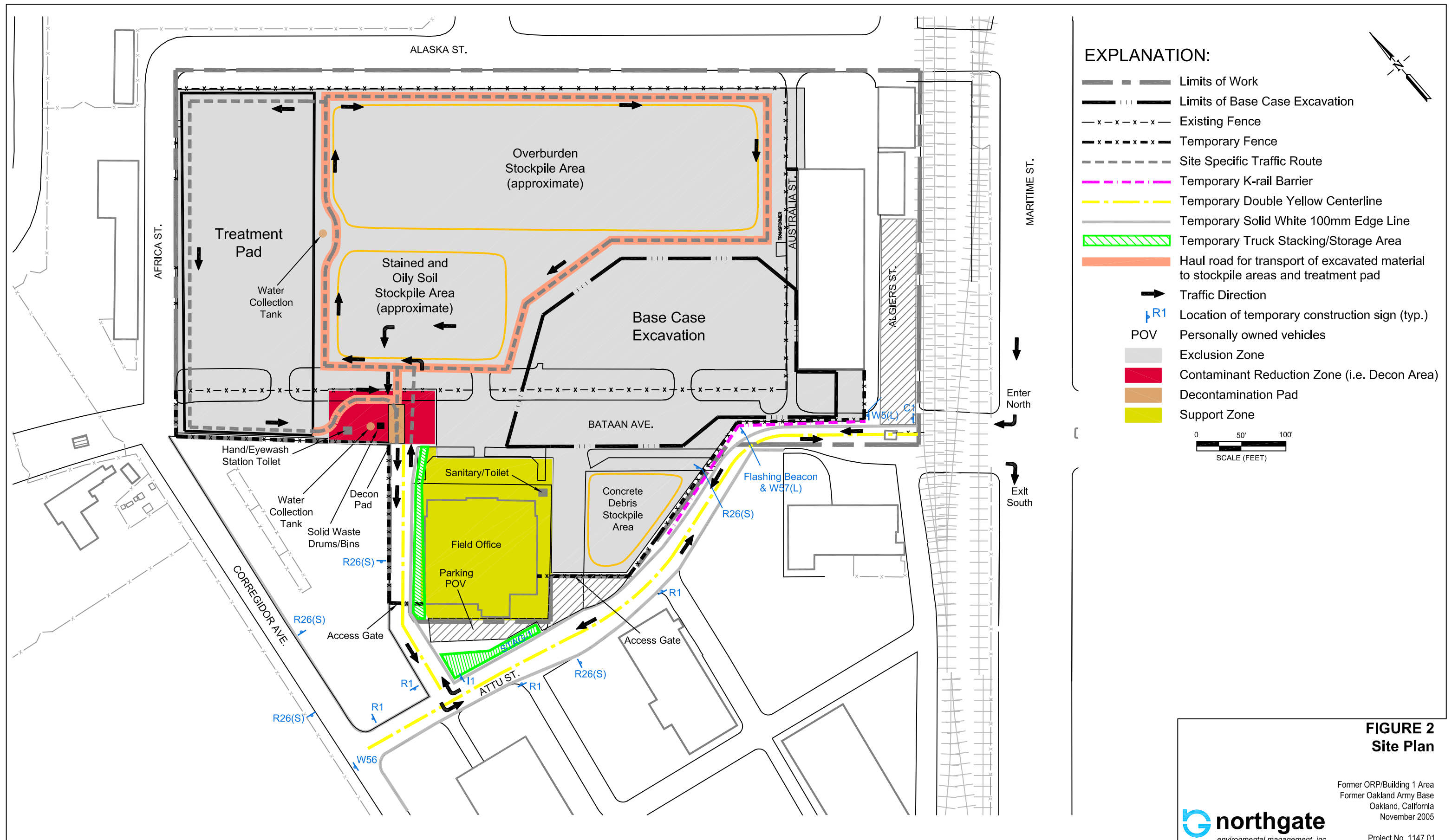
PPE – Personal Protective Equipment

SSO = Site Safety Officer

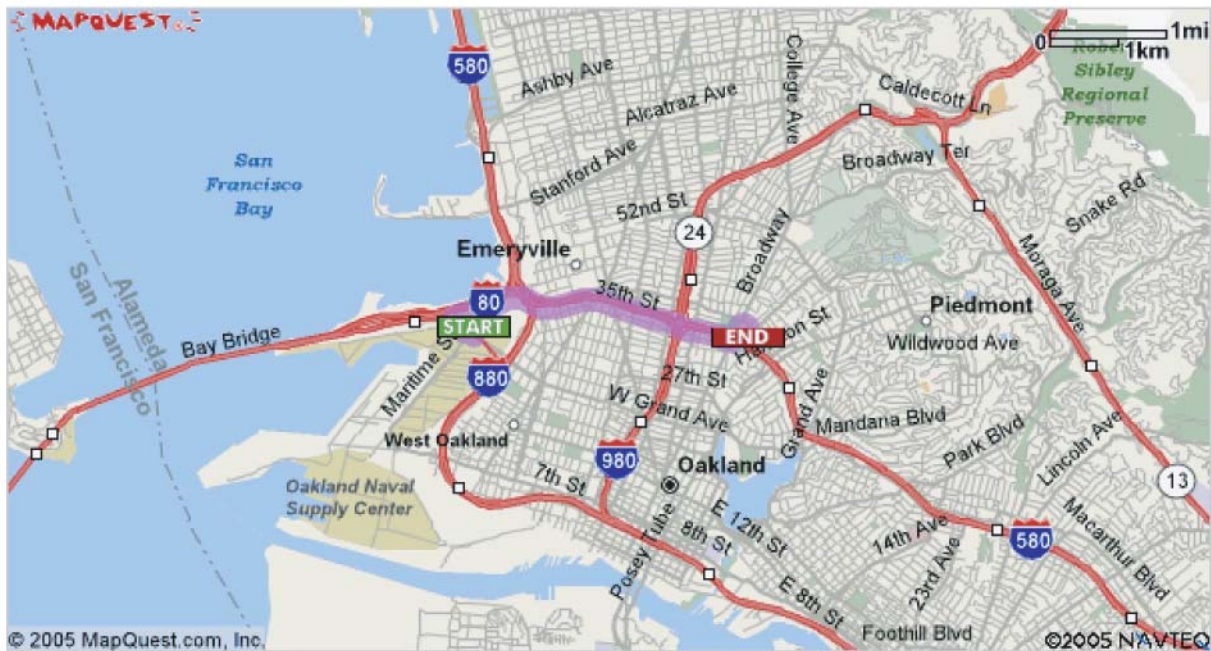
## FIGURES





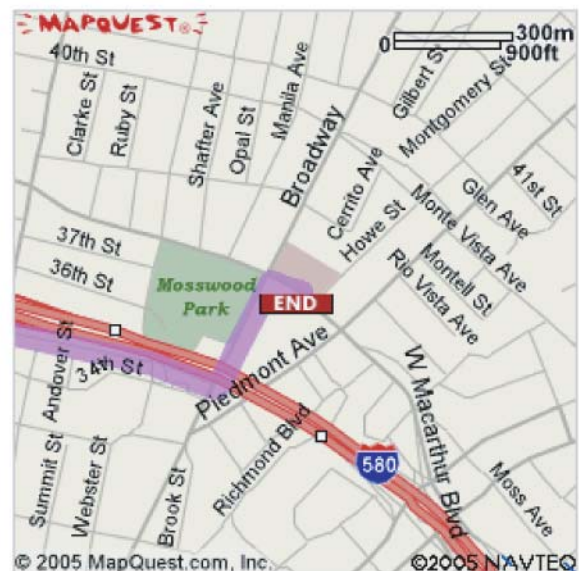
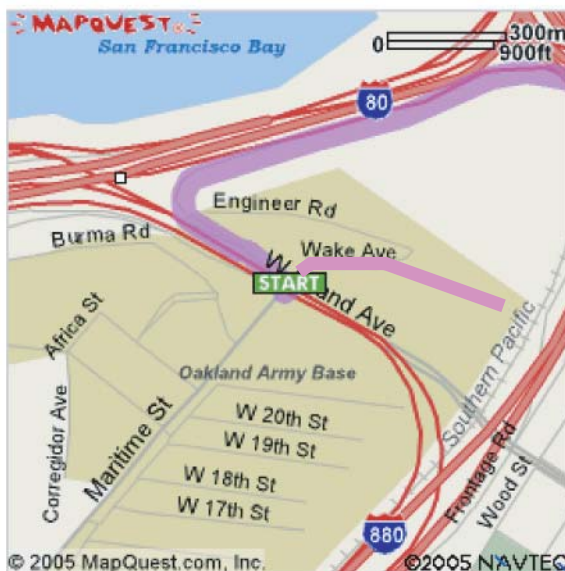






**Start:**  
**Maritime St & W Grand Ave**  
 Oakland, CA 94601, US

**End:**  
**280 W Macarthur Blvd**  
 Oakland, CA 94611-5642, US



#### Directions

#### Distance

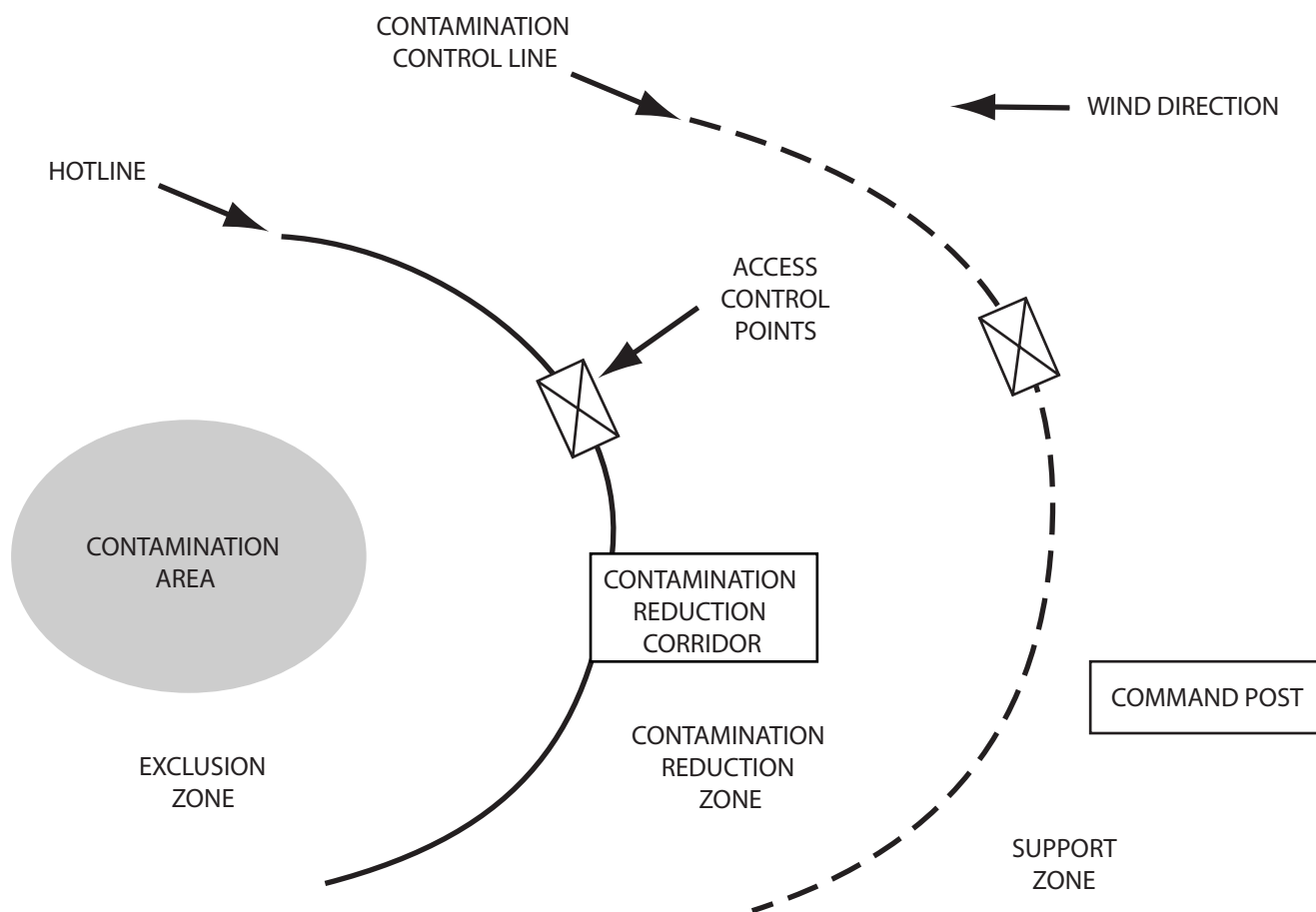
- 1:** Start out going NORTHEAST toward WAKE AVE. <0.1 miles
- 2:** Merge onto I-580 E via the ramp on the LEFT toward HAYWARD/STOCKTON. 2.2 miles
- 3:** Take the BROADWAY/WEBSTER ST exit. 0.4 miles
- 4:** Take the BROADWAY SOUTH ramp. <0.1 miles
- 5:** Turn LEFT onto BROADWAY. 0.1 miles
- 6:** Turn RIGHT onto W MACARTHUR BLVD. <0.1 miles
- 7:** End at **280 W Macarthur Blvd**  
Oakland, CA 94611-5642, US

**Total Est. Time: 5 minutes**

**Total Est. Distance: 2.96 miles**

**FIGURE 3**  
**Hospital Route Map**

Former ORP/Building 1 Area  
 Former Oakland Army Base  
 Oakland, California  
 November 2005  
 Project No. 1147.01



**FIGURE 4**  
**Generic Site Control Zones**

Former ORP/Building 1 Area  
 Former Oakland Army Base  
 Oakland, California  
 November 2005  
 Project No. 1147.01

**APPENDIX A**  
**HEALTH AND SAFETY FORMS**



# SAFETY COMPLIANCE AGREEMENT AND DOCUMENTATION OF SITE SAFETY BRIEFING

DATE \_\_\_\_\_

TIME \_\_\_\_\_

SITE LOCATION \_\_\_\_\_

PROJECT NUMBER \_\_\_\_\_

SITE SAFETY OFFICER \_\_\_\_\_

## TOPICS COVERED DURING BRIEFING:

- \_\_\_\_\_ Extent and concentration of chemical hazards on-site
- \_\_\_\_\_ Health effects of chemical hazards
- \_\_\_\_\_ Physical hazards on-site
- \_\_\_\_\_ Levels of protection required
- \_\_\_\_\_ Route to the nearest hospital
- \_\_\_\_\_ Location of emergency equipment (first-aid kit, eye wash station, fire-fighting equipment)
- \_\_\_\_\_ Monitoring procedures
- \_\_\_\_\_ Action levels
- \_\_\_\_\_ Decontamination procedures
- \_\_\_\_\_ Location of emergency numbers
- \_\_\_\_\_ Verification that Health & Safety Plan has been received and read

I, the undersigned, have acknowledged and read a copy of the Site-Specific Health and Safety Plan (SSHP) for the referenced project. I agree to comply with all of the health and safety requirements, as indicated within the SSHP. I understand that I may be prohibited from working on the project for violating any of the requirements. In addition, I have been verbally briefed on the topics noted above.

## DOCUMENTATION

(SSO must see Verification before initialing column)

Attendees Name/Company	40-Hour HAZWOPER	8-hour HAZWOPER refresher	Respiratory Fit Testing	Medical Monitoring
1. (Print) _____ (Signature) _____				
2. (Print) _____ (Signature) _____				
3. (Print) _____ (Signature) _____				
4. (Print) _____ (Signature) _____				
5. (Print) _____ (Signature) _____				
6. (Print) _____ (Signature) _____				





**northgate  
environmental  
management, inc.**

3629 Grand Avenue ¥ Oakland, California 94610  
(510) 839-0688 ¥ Fax (510) 839-4350

## Calibration and Instrument Information - Organics

### Review Sheet

Project \_\_\_\_\_ Lab \_\_\_\_\_ Lab Job No. \_\_\_\_\_

Method \_\_\_\_\_ Matrix \_\_\_\_\_ Batch No. \_\_\_\_\_

GC Analyses: Instrument ID \_\_\_\_\_

	DATE	TIME	FREQUENCY	ACCEPT CRITERIA	RESULTS	RAW DATA CHECK
INITIAL CALIBRATION						
CONTINUING CALIBRATION			DAILY			
CALIBRATION CHECK (CCV)			10% End			
SYSTEM PERFORMANCE CHECK			DAILY			

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

GCMS Analyses: Instrument ID \_\_\_\_\_

	DATE	TIME	FREQUENCY	ACCEPT CRITERIA	RESULTS	RAW DATA CHECK
INITIAL CALIBRATION						
CONTINUING CALIBRATION OR ICV			Daily or after I.C.			
CCV			10% End			
ICB						
CCB			10% End			

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Northgate Environmental Management  
Daily Health and Safety Form**

## **CONTRACTOR AND SUBCONTRACTOR PERSONNEL**

### ***Contractor and Subcontractor Agreement***

1. Contractor certifies that the following personnel, noted below, to be employed in the work area in have met the requirements of the OSHA Hazardous Waste Operations and Emergency Response Standard 29 CFR 1910.120, 8 CCR 5192, and other applicable OSHA Standards.
2. Contractor certifies that in addition to meeting the OSHA requirements, it has received a copy of this SSHSP, and will ensure that its employees are informed of and will comply with OSHA requirements and the guidelines in this SSHSP.
3. Contractor further certifies that it has read, understands, and will comply with all provisions of this SSHSP, and that it will take full responsibility for the health and safety of its employees and subcontractors, if any.

**CONTRACTOR**

**SIGNATURE**

**DATE**

---

---

---

---

---

---

**Northgate Environmental Management  
Daily Health and Safety Form**

***Visitors***

I have read this Site-Specific Health and Safety Plan (SSHSP) and will comply with it.

NAME	COMPANY/AGENCY	SIGNATURE	DATE

# INCIDENT REPORT FORM

1. What type of incident took place?

☐ Major Injury      ☐ First-Aid      ☐ Equipment Damage  
☐ Minor Injury      ☐ Near-Miss      ☐ Property Damage

2. Date: \_\_\_\_\_ Time: \_\_\_\_\_ am pm ☐ Equipment Damage

3. Name of Injured \_\_\_\_\_ Occupation: \_\_\_\_\_

4. Exactly where did the incident occur? (Describe specific machinery or equipment involved, if applicable)

\_\_\_\_\_  
\_\_\_\_\_

5. How did the incident take place? (Describe what was being done at the time of the incident)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Nature and extent of injury or damage:

\_\_\_\_\_  
\_\_\_\_\_

7. Witnesses? ☐ Yes ☐ No

Names of witnesses (attach any statements to this report)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. Describe the training the person received for this task, and when:

\_\_\_\_\_  
\_\_\_\_\_

9. Is the person experienced at this task? ☐ Yes ☐ No

Approximate time in months \_\_\_\_\_

---

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

**APPENDIX B**  
**CONFINED SPACE ENTRY PERMIT FORM**



## Confined Space Entry Permit

Date & Time Issue: _____	Date & Time Completed: _____
Job Site: _____	Competent Person: _____
Work To Be Performed: _____	
_____	
_____	

### Employee Training and Pre-Entry Briefing

- |  |                              |                             |
|--|------------------------------|-----------------------------|
| 1. Safe Entry Rescue Training conducted?   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 2. Mandatory Pre-Entry Briefing conducted? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 3. Does this job require special training? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

### Emergency/Rescue Procedures Test nearest phone # \_\_\_\_\_ Radio # \_\_\_\_\_

1. Location of written emergency/rescue plan \_\_\_\_\_
  2. Type of emergency/rescue team required: \_\_\_\_\_
  3. Location of First Aid Equipment \_\_\_\_\_ Date Checked: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Diagrams:

<b>Job Assignment</b> Enter Space Hoist (s); never leaves site Radio Runner; Pocket Rescue Procedures Record Gas Testing Pass Job Parts & Equipment CPR/1st Aid certification	<b>Responsible Person</b> _____ _____ _____ _____ _____	<b>Special Instructions:</b> _____ _____ _____ _____ _____
--	--	--

**Notifications**Operations ☐ Maintenance ☐ Contractor(s) ☐ Other: \_\_\_\_\_**Gas Detector Calibration**

#	Type	Date

**Monitor Testing - Test before each entry**

Date	Time	Percent Oxygen	H2S (ppm)	L.E.L. %	Other (ppm)	Initial

**Ventilation Required**

- ☐ Natural ventilation Sufficient  
☐ Forced exhaust ventilation  
☐ Forced supply ventilation  
☐ Forced supply and exhaust ventilation  
**Duration of Mechanical ventilation**  
☐ Ventilation required throughout job  
☐ Ventilation required only until monitoring is satisfactory  
☐ Other: \_\_\_\_\_

**Personal Protective Equipment**

Check List	Initial	
	Yes	Does Not Apply
All Lines leading to and from confined space have been blinded or disconnected. _____		
Electrical service disconnected or locked out. _____		
All grounding and bonding cables in place. _____		
All lighting, ffling, and extension cords are approved explosive proof equipment _____		
Ground Fault Circuit Indicator (GFCI) checked and functioning. _____		
All Ignition sources have been isolated. _____		
SCBA supply and alarms checked and in proper condition. _____		
Continuous flow respiratory supply system has been checked and is in proper condition. _____		
All safety harnesses and life lines checked and in proper condition. _____		
Required Protective clothing, gloves, boots, etc. being used. _____		
Employees have been trained in the use, care, and limitation of their respiratory protective equipment. _____		
Rescue/standby person trained in emergency procedures and resuscitation. _____		
Rescue tripod and assorted rigging inspected _____		
All emergency systems such as air packs, fire extinguishers, backup breathing supply, alarms, etc. ready for use. _____		
Special warning/caution signs posted. _____		
Ventilation equipment in use. _____		

- Eyes**  
☐ Chemical Goggles  
☐ Face Shield & Chemical Goggles  
☐ Safety Glasses  
**Extremities**  
☐ Hard Hat  
☐ Gloves, type \_\_\_\_\_  
☐ Boots  
☐ Hoods \_\_\_\_\_  
**Body**  
☐ Cloth Overalls  
☐ White Tyvek  
☐ Yellow (coated) Tyvek  
☐ Waterproof Suit  
**Respiratory**  
☐ SCBA  
☐ Air Line Respirator  
☐ Air Line with Egress  
☐ Cartridge Respirator  
☐ Cartridge Type \_\_\_\_\_  
**Other**  
☐ Hearing Protection  
☐ Parachute Harness and Lifeline (top entry)  
☐ Chest Harness and Lifeline (side entry)  
☐ Tripod or Equipment

Job Supervisor

Date

Division Manager

Date

---

**Confined Space Pre-Entry Checklist**

- |  | YES                      | NO                       |
|--|--------------------------|--------------------------|
| 1. Did you check the surrounding areas for any signs of drifting vapors from tanks, piping, or sewers?                         | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is it likely to remain clear of dangerous air contaminants while occupied?  | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are you trained in the operation of the gas monitor being used?   | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Has the gas monitor been calibrated per manufacturer's instructions?  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Is all other safety equipment on hand and in working order and the radio checked by establishing contact with a foreman?    | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Did you test the atmosphere in the confined space prior to opening the lid?   | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Did the atmosphere check as acceptable (no alarms)?   | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. If alarm sounded; did you ventilate for a clear atmosphere, allow to load, purge again, and retest prior to entry?          | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Will the atmosphere inside the confined space be continuously monitored while the space is occupied?                        | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Have all personnel involved been trained on the emergency procedures and is it on their Safety and Health Training Record? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Have all supervisors required to be on the site or notified been contacted?  | <input type="checkbox"/> | <input type="checkbox"/> |
- 

**NOTICE**

If any of the above questions are answered "NO," do not enter the space. Contact the Safety Director and your supervisor immediately.

---

Job Location/Work to be Done: \_\_\_\_\_

LEAD Worker Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



# **CONFINED SPACE ENTRY LOG & PERIODIC AIR TESTING**

**AUTHORIZED ATTENDANT:**      On Duty / Off Duty

_____	_____ / _____
_____	_____ / _____
_____	_____ / _____

<b>AUTHORIZED ENTRANTS:</b>	<b>In/Out</b>	<b>In/Out</b>	<b>In/Out</b>	<b>In/Out</b>	<b>In/Out</b>
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____
_____	_____ / _____	_____ / _____	_____ / _____	_____ / _____	_____ / _____

**AIR TESTS WITHIN CONFINED SPACE:**    ✓ if required

<b>TEST</b>	<b>ACCEPTABLE</b>	<b>RESULTS</b>					
Oxygen	>19.5 – 23.5%	_____	_____	_____	_____	_____	_____
Flammables	<20% LEL	_____	_____	_____	_____	_____	_____
CO	25 ppm	_____	_____	_____	_____	_____	_____
H <sub>2</sub> S	10 ppm	_____	_____	_____	_____	_____	_____
SO <sub>2</sub>	2 ppm	_____	_____	_____	_____	_____	_____
CO <sub>2</sub>	5000 ppm	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Date: _____	Time: _____	_____	_____	_____	_____	_____	_____
Initialed by air tester: _____		_____	_____	_____	_____	_____	_____

---

## EMERGENCY ACTION PLAN

### Confined Space Rescue

**CAUTION** – Remember that often there are more fatalities associated with rescue than the actual victim(s) involved.

Follow the Emergency Action Plan (page XI-7), adding:

1. Sound an alarm or summon for help by voice command.
2. Use a monitor to sample the confined space air to determine if it is clear for entry.
3. If the air is not safe, ventilate and re-sample to determine if it is clear for entry.
4. If the air is not safe, wait for a fire department rescue team, or, if available, use personnel who are properly trained in the use of a fitted lifeline and respirator (SCBA).
5. Rescue can now begin.
6. Enter the confined space only after a second standby person, properly trained and wearing proper safety equipment is at the scene and ready to assist.
7. Once you have entered the confined space, assess the cause of the accident. These situations require special handling:
  - a. **If the person is not breathing or if the atmosphere will not sustain life**, fresh air and artificial respiration must be made available. Lack of oxygen beyond five (5) minutes may result in permanent brain damage.
  - b. **If the injured person is severely bleeding**, first aid procedures must be started immediately to stop bleeding. Arterial bleeders are extremely critical – treat for shock.
  - c. **If the injured person has fallen and is suspected of having a back or neck injury**, if possible, immobilize the person in the position found. In such cases, one rescuer is not sufficient since difficulties may be encountered because of the limited size of the confined space opening. If person is unconscious, and not breathing, begin CPR. Treat any unconscious person suspected of being a fall victim in the same manner you would a person with a back or neck injury.

---

**CONFINED SPACE ENTRY PROGRAM**

**DO NOT ENTER A CONFINED SPACE SITUATION UNTIL YOU HAVE CONSIDERED EVERY QUESTION, AND HAVE DETERMINED THE SPACE TO BE SAFE.**

**YES NO**

☐ ☐ Is entry necessary?

**TESTING**

☐ ☐ Are instruments used in atmospheric testing properly calibrated?

☐ ☐ Was the atmosphere in the confined space tested?

☐ ☐ Was Oxygen at least 19.5% - not more than 23.5%?

☐ ☐ Were toxic, flammable, or oxygen-displacing gasses/vapors present?

☐ ☐ - Hydrogen sulfide

☐ ☐ - Carbon Monoxide

☐ ☐ - Methane

☐ ☐ - Carbon Dioxide

☐ ☐ - Other (list) \_\_\_\_\_

**MONITORING**

☐ ☐ Will the atmosphere in the space be monitored while work is going on?

☐ ☐ Continuously?

☐ ☐ Periodically? (If yes, give interval: \_\_\_\_\_)

**REMEMBER: ATMOSPHERE CHANGES OCCUR DUE TO THE WORK PROCEDURE OR THE PRODUCT STORED. THE ATMOSPHERE MAY BE SAFE WHEN YOU ENTER, BUT CAN CHANGE VERY QUICKLY.**

**CLEANING**

☐ ☐ Has the space been cleaned before entry is made?

☐ ☐ Was the space steamed?

☐ ☐ If so, was it allowed to cool?

**VENTILATION**

☐ ☐ Has the space been ventilated before entry?

☐ ☐ Will ventilation be continued during entry?

☐ ☐ Is the air intake for the ventilation system located in an area that is free of combustible dusts and vapors?

- ☐ ☐ If atmosphere was found unacceptable and then ventilated, was it re-tested before entry?

### ISOLATION

- ☐ ☐ Has the space been isolated from other systems?  
☐ ☐ Has electrical equipment been locked out?  
☐ ☐ Have disconnects been used where possible?  
☐ ☐ Has mechanical equipment been blocked, choked, and disengaged where necessary?  
☐ ☐ Have lines under pressure been blanked and bled?

### CLOTHING / EQUIPMENT

- ☐ ☐ Is special clothing required (boots, chemical suits, etc.)?  
If so, specify: \_\_\_\_\_  
☐ ☐ Is special equipment required (rescue equipment, communications equipment, etc.)?  
If so, specify: \_\_\_\_\_  
☐ ☐ Are special tools required?  
If so, specify: \_\_\_\_\_

### RESPIRATORY PROTECTION

- ☐ ☐ Are NIOSH approved respirators of the type required available at the worksite?  
☐ ☐ Is respiratory protection required (air-purifying, supplied air, self-contained breathing apparatus, etc.)?  
If so, specify type: \_\_\_\_\_

### TRAINING

- ☐ ☐ Have you been trained in proper use of respirator?  
☐ ☐ Have you received first aid/CPR training?  
☐ ☐ Have you been trained in confined space entry and do you know what to look for?

### STANDBY / RESCUE

- ☐ ☐ Will there be a standby person on the outside in constant visual or auditory communication with the person on the inside?  
☐ ☐ Will the standby person be able to see and/or hear the person inside at all times?

- ☐ ☐ Will safety lines and harness be required to remove a person?
- ☐ ☐ Are company rescue procedures available to be followed in the event of an emergency?
- ☐ ☐ Are you familiar with emergency rescue procedures?
- ☐ ☐ Do you know who to notify and how in the event of an emergency?

Foreman: \_\_\_\_\_ Date: \_\_\_\_\_

Employee Name: \_\_\_\_\_ Employee Signature: \_\_\_\_\_

Employee Name: \_\_\_\_\_ Employee Signature: \_\_\_\_\_

Employee Name: \_\_\_\_\_ Employee Signature: \_\_\_\_\_

Employee Name: \_\_\_\_\_ Employee Signature: \_\_\_\_\_

Employee Name: \_\_\_\_\_ Employee Signature: \_\_\_\_\_

Employee Name: \_\_\_\_\_ Employee Signature: \_\_\_\_\_

Employee Name: \_\_\_\_\_ Employee Signature: \_\_\_\_\_

Employee Name: \_\_\_\_\_ Employee Signature: \_\_\_\_\_



environmental management, inc.

November 7, 2005

Project No. 1147.01

Mr. Andrew Clough  
Environmental Manager  
Oakland Base Reuse Authority  
700 Murmansk Street, Suite 3  
Oakland, California 94607

Re: Response to DTSC's October 21, 2005 Letter  
Site-Specific Health and Safety Plan  
Former Oil Reclaiming Plant (ORP)/Building 1 Area  
Former Oakland Army Base—Economic Development Conveyance Area  
Oakland, California

Dear Mr. Clough:

On behalf of the Oakland Base Reuse Authority (OBRA), Northgate Environmental Management, Inc., (Northgate) has prepared these comments in response to the above-referenced correspondence from Henry Wong, Remedial Project Manager, Office of Military Facilities, Department of Toxic Substances Control (DTSC), dated October 21, 2005.

- 1. Page 14, Tables 2 and 4, and Appendix A Forms: Please replace “SSSHP,” “SSHHP,” and “HSP” with “SSHSP,” and ensure that the correct acronym is being used throughout the plan.***

Response to Comment No. 1:

The plan has been revised as requested.

- 2. Page 14: The SSHSP states that all respirator users shall be current in medical evaluation, respirator training, and fit testing. Please revise this statement to include compliance frequencies (e.g., annual fit testing, etc.).***

Response to Comment No. 2:

The section has been revised to indicate compliance frequencies for medical evaluation, respirator training, and fit testing.

- 3. Figure 2 and page 15: Please update the figure using Figure 2 of the Traffic Control and Transportation Plan dated September 16, 2005. Please also depict the exclusion zone, contaminant reduction zone, and support zone with***

***contrasty colors and avoid using turquoise, cyan, and blue together on the same figure. DTSC believes the exclusion zone is the Limit of Work excluding the building areas.***

Response to Comment No. 3:

Figure 2 has been revised as requested. Section 7.0 has been revised to describe the exclusion zone as the Limit of Work excluding the building area.

- 4. Page 16, footnote 1: The SSHSP indicates that non-coated Tyvek™ and similar fabrics should never be exposed to detergent and water solutions during the decontamination process. Please detail how would such protective clothing be decontaminated. Would these clothing be removed and disposed of whenever a site worker exits the exclusion zone?***

Response to Comment No. 4:

The section has been revised to indicate that non-coated Tyvek™ and similar fabrics will dry wiped. If residual material remains on these materials, they will be removed and disposed of whenever a site worker exits the contamination reduction zone.

- 5. Page 18: Please discuss the criteria for determining the suitability of recycling or reusing personal protective equipment on-site. DTSC believes all personal protective equipment must be sufficiently decontaminated before subsequent uses.***

***The SSHSP also suggests that wastewater generated during decontamination would be recycled on-site. Please clarify Pacific States' intent of reusing the decontamination water. Without further specificity, DTSC discourages recycling decontamination waste because such practice would decrease the effectiveness of the washing process.***

***Response to Comment No. 5:***

The section has been revised to address DTSC's comment. Residue from remediation activities shall be removed from PPE. If visual inspection indicates that residue remains on PPE, it cannot be reused and must be disposed of. Rinsate from decontamination procedures will only be reused as initial wash to remove gross soil/material adhesion in the decontamination process followed by subsequent wash cycles with uncontaminated water.

- 6. Page 28, last bullet: Please include the requirement of an annual 8-hour Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) refresher training.***



Response to Comment No. 6:

The section has been revised as requested.

7. ***Table 4: The table indicates that the personal protective equipment for the corresponding field activity is discussed in Section 7.0 of the SSHSP; however, this section does not provide such information. Please specify in Table 4, instead of referencing, the appropriate personal protective equipment for each field activity.***

Response to Comment No. 7:

The table has been revised to include PPE levels as covered in Table 6 “PPE Levels and On-Site Equipment”.

8. ***Appendix A, Safety Compliance Agreement and Documentation of Site Safety Briefing: On the briefing form, please revise the column headings to “40-Hour HAZWOPER,” “Respirator Fit Testing,” and “Medical Monitoring.” Please also include a new column for “8-Hour HAZWOPER Refresher.”***

Response to Comment No. 8:

The appendix has been revised as requested

If you should have any questions regarding the above-referenced response to comments on the *Site-Specific Health and Safety Plan, Former Oil Reclaiming Plant (ORP)/ Building 1 Area, Former Oakland Army Base—Economic Development Conveyance Area, Oakland, California*, please contact me at (510) 839-0688.

Sincerely,  
**Northgate Environmental Management, Inc.**



Alan Leavitt, P.E.  
*Principal*





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